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THEORIES OF HUMAN ORIGIN.

IN the opinion of most of the anthropologists of the present day, it is as yet premature to pronounce, or even to form an absolute decision, upon the question, whether man's origin was unique in its occurrence, or accomplished at several points of time or place. During the short course of our investigation of man's real antiquity, facts have but rarely and feebly borne direct witness in the case; collateral evidence, derived from existing characters, is but too liable to be vitiated by party spirit; no wonder, then, that to the judicious anthropologist it seems proper to wait for a larger and clearer mass of testimony before venturing to try conclusions upon a subject so obscure. It may, however, be observed that it is far less difficult to take this position, than to preserve it consistently. Many an unconscious partisan, while professing to discard "plurality" and "transmutation" alike from the vocabulary of his faith, is unable to conceal from others his affection for a chosen theory. We must, nevertheless, admit that in the present incomplete state of our knowledge of archaic anthropology, to pretend to issue a bull decisive of the rival claims of unity and plurality, would savour greatly of the profundity of Dogberry and the temperance of St. Athanasius. It would, indeed, be scant wisdom to consider this problem ripe for complete solution until its premise, the method of organogeny, has been found capable of demonstration. The apparently wide divergence of opinion upon this preliminary point, would seem to argue ill for its speedy settlement; and as long as its students are baffled either by insufficiency of light or by obliquity of vision, it behoves the truth-winner, who weighs polygeny against monogeny, to keep the scale-beam upon the pivot. But while this cautious reserve is perfectly justifiable, nay, laudable, the expediency of maintaining it does not withdraw the license granted by science itself, of adopting provisional opinions in accordance with the data at present supplied by observation or in-

ference. This not only may but must be done by the most circumspect. However ready, however sincere, we may be in protesting that we are not, nor will be, under the influence of such opinions, if they seem to be either the creatures or the creators of hypotheses, in practice we find it impossible to avoid entertaining them. The mind can no more help forming an opinion upon every matter brought within its range, than it can avoid conceiving the ideas which underlie them; and those opinions which relate to questions of scientific importance, demand the most careful expression we can give to them,—the most unhesitating expression consistent with that modesty and forbearance which should be the distinguishing characteristic of scientific utterance. It is not an unreasonable necessity which converts the privilege of the many into the duty of the few, whose judgments have been so tried by their labours as to command universal respect. In some minds, indeed, devotion to practice seems to beget a contempt of theory; but there is probably no man of science, however lofty his position and severe his method of investigation, who can long sit, Jove-like, on his Olympian summit, and from that high but hard seat of fact look down unsympathisingly on the discussions of meaner mortals: who can long hear the appeal of hope or distress made to his purer wisdom, and refuse—

“The fatal nod,

Which rends the clouds, and proves him less than God.”

Happily for English, and we will add, true science everywhere, the supremacy of fact is undoubted by the great majority of inquirers; although a high authority in this country has approved, by his example, the censure passed by a great German chemist upon the hero-worship paid by us to the father of the inductive system, that method of philosophising will probably be our safeguard till the progress of decrepitude reduces the intellect to its second childhood, and the mind is again let loose to revel in the revelations of the fancy. But it may fairly be questioned whether a blind devotion to facts, and facts alone, be not in reality prejudicial to the advancement of knowledge, even as a monomaniacal loyalty to a reigning house may be inimical to good government. Science is no miser, to gather from every quarter the isolated truths we call facts, and, after testing their value, to hoard them up from all eyes but its own, and all purposes whatever; but rather a merchant, whose capital is in the hands of bankers, by whom it is put to usance, and made subservient to its own increase and the general good. Comparison, arrangement, correlation, are the proper modes of employing our crude wealth, and constitute a higher plane of science than is trodden by him who is a seer of things,—a describer of phenomena, and nothing more. It is

impossible to have recourse to these without being led by their revelations of the interdependence of facts towards general truths, and along the various lines of facts which they define towards first principles. The more conscientiously this is done the better, not only for general science, but for the individual inquirer. There is more discomfort, more peril in allowing vague second-hand ideas to float incoherently through the brain, than in endeavouring honestly to ascertain how far they may be reposing on known facts, or shaped by recognised laws. But if in the examination of the evidence which presents itself in favour of any plausibility, the student discover that the chain breaks off far short of the bottom of that particular well in which he supposes the truth to lie, and if he be, nevertheless, disposed to drop to the conclusion through the remaining space by the simple force of gravity, he is arrested, awe-stricken by that ominous word,—hypothesis. A rational dread of hypothesis is exceedingly wholesome; but the indiscriminating use which some writers make of the word, as a reproach against the less practically minded, sometimes does more credit to their zeal than to their judgment. The distance is very great between the hypotheses which precede knowledge and defy reason, and those which naturally, if erroneously, rise in explanation of connected series of phenomena. The necessity, which discovers itself in every thoughtful mind, of passing beyond the limits of observation or experiment, and accounting for the relations and sources of the facts acquired, renders it frequently unable to wait for that complete empiricism, without which, satisfactory induction is impossible. This greed for explanation, temperately indulged, is neither unphilosophical, nor, as it has been often declared, futile. On the contrary, it is oftentimes productive of results which mere phenomenal investigation would long fail to accomplish. A speculation, once entertained, acts like Sindbad's cumbersome friend, it compels its victim to labour for its special behoof. Facts are, in reality the only currency in science, but their mint-mark is impressed by criticism; and the individual opinion, whether friendly or hostile, which thus determines their value, is generally a stimulant, frequently a guide, to the search after further riches. The true danger of hypothetical ratiocination lies, not in any intrinsic vice, but in the bigotry it is apt to engender in certain mental castes, and in the stained medium it interposes between the eye and its objects. The student of science, who avoids these evils, may be excused if he takes any and every opportunity of asserting his liberty of holding and expressing provisional opinions, not only as a personal and most valuable privilege, but as the very basis of scientific truth,—the foundation of intellectual progress, as distinguished from the reception of statements

once for all delivered.* It may, indeed, be safely said that there is no opinion current amongst scientific men, not even those whose claim to the title "principle" appears most unquestionable, that is not essentially provisional, liable to modification or even revolution, under the pressure of increased knowledge. In the change which is now taking place in the minds of geologists, as to the igneous origin of granite, we have an instructive instance of the want of finality in the most generally accepted doctrines of science; and were we, at this moment, in possession of such a body of facts relating to the generation of life, or to the accidents of human origin, as would compel us to form an inductive decision upon either of them, its justification would differ from the grounds of current hypothetical views on the same subject in degree only. There would be more evidence, and so far the decision would be safer; but like its speculative precursors, it would not be beyond appeal, nor would the appeal be carried to a different court. It may almost be asserted, that every scientific opinion is speculative. With this "right of search" conceded to him, the student of man, who tends to reflect upon the probabilities of human origin, need not be terrified by the opprobrium of "rushing in where angels fear to tread", or of breeding opinions which, like the royal hunchback, are "deformed, unfinished, sent before their time into this breathing world, scarce half made up, and that so lamely and unfashionable, the dogs bark at them as they halt by them." The comparative utility of confining ourselves to experimental research, or of venturing into the latitudes of surmise, is a question which does not admit of a reply which shall be universally applicable, it must be decided in accordance with the individual bent and opportunities of the inquirer.

Certain it is that whether we accord the implied indulgence to speculators, or not, our generation assumes the privilege of theorising to a very great extent. At no previous time has the mind of thinking men been fixed on this subject, of human origin, so generally, so intently, so discordantly, and, on the whole, so rationally, as now; perhaps, because at no previous time has so great a quantity of materials, insufficient as they truly are, been at their command. The interest we feel in it is, no doubt, quickened by the results of modern research; we view it with the daybreak of science upon it, and it is recommended by the novelty and many-tinted beauty of that hour. Yet there seems to be a peculiar fascination about the mystery of human beginnings, which the mind in all ages has been unable to resist. It is the culminating point of cosmogonies universally,—the point of contact at which systems of mythology touch the earth. Yearning to know more, always coexists with effort to be higher;

education and civilisation are nearly synonymous; but in the civilisations of antiquity, the mind was all unconscious of the teachings of external nature, it was therefore compelled to concentrate itself upon the being of whose nature it formed part, and in the belief of its own self-sufficiency, it derived from itself materials for strange autobiographies. Every civilisation had its own racial school of thought,—every school its own metaphysical account of human nature and human origin. The Chinese, the Magian, the Hindoo, the Chaldean, the Egyptian, differed amongst themselves in their conceptions and explanations; they agreed in their inability to look beyond themselves in any other direction than into the supernatural. Later on, the philosopher who had learned to discard the popular symbolism of his race, paid homage to the same imperious question in the schools of Alexandria, Athens, and Rome, with a zeal incommensurate with his materials,—a success which leaves almost everything to be acquired by generations future to our own.

With uneducated man universally, the natural, and therefore trustworthy, mode of accounting for his individual origin is to point to the earth, into which he knows his substance must one day be resolved. Whatever expectations of futurity may have been engendered in his mind, the starting-point of the past is always afforded by the *alma mater*, from whose breast he still derives his nourishment. When the title of a race to its fatherland is in dispute, the strongest evidence it can adduce, the proofs most convincing to its neighbours, are its traditions, that it has arisen from the soil it claims. There is, indeed, a native philosophy which in this respect anticipates the speculations and discoveries of modern science, which assures man that in origin, as in constitution, he is one with the other productions of nature. Neither the savage nor the peasant are capable of conceiving those transcendental ideas of man's nature, which shake the faith of others in his lowly derivation. But though Jew or Gentile involuntarily recognises in the elements around him the materials of his own composition, the mode whereby gross and seeming dead matter becomes invested with the qualities of a moving, thinking being, is to him an unfathomable mystery. Conscious that it is an effect far beyond human power,—ignorant of the subtle and hidden energies at work in and about him, yet convinced that some potent influence must be ever engaged in calling life from out of death,—his mind has no resource but to attribute the work to supernatural agency,—no satisfaction but in stolid content with the unknown. In this phase of its metamorphosis the intellect, if it be able to mount to the level of a pure abstraction, cannot preserve its tenure of an idea so refined. To conceive a life-giving being, itself unpossessed of the known ad-

junets of life, passes the ability of many a cultured understanding. The imaginative faculty by which the untrained mind is characterised, proceeds at once to invest its concrete object with attributes which, though unlimited in extent, are in kind necessarily mere reflections of the faculties and passions of the thinker, who, knowing nothing higher than himself, can conceive of nothing nobler. Hence the constant creation of anthropomorphous gods, and hence, by interdependence of ideas, the self-complacent notion that man himself, with his so-fashioned God-like features, is an exceptional being, to whose origin, as a reproduction of the deity, anything less than the direct handicraft of divinity was inadequate. Man gave to the gods his image,—what so natural as to suppose that the gods had created him in theirs. Mythology testifies to the frequency, experience to the indelibility, of this opinion among various Europasian races. In no instance, however, is it more forcibly illustrated than in the cosmogony of the old immigrants into Canaan. Chaldeans by extraction and early sentiment, they unconsciously turned their faces to the land of the great rivers eastward, in Eden, as that of their nativity, and, exaggerating its natural advantages, pictured it, under divine culture, the most glorious of the paradises in which oriental luxury delighted. Here they beheld the first man of their red stock, the immediate handiwork of their old peculiar gods, the Elohim, whose man-like faculties having been transmitted from themselves, they were compelled to recognise in their Adamic prototype. Nor did the Gentile mythologies of the east differ from that of the Hebrews in another respect,—in their proneness to trace national origins to the gods by the intervention of demigods; sons often opponents of the deities, and after expulsion from divine intimacy, procreators of human races under the guise of local kings,—the groundwork of all such traditions. The general belief that certain portions of each human type had their origin in special localities, is to some extent acceptable to modern science. Theosophical exerescences eliminated, this fundamental tenet remains, and, whatever its truth, accords with the deductions of a large section of naturalists and anthropologists of the present day. There are, however, those whose zoological principles conduct them to the antipodes of the old creed; and in agreement with them, on this point, is a still larger class of men moving in other circles of science, whose opinion is based, not on scientific grounds, but on the unquestioned tradition of a single race. Nor are there wanting some who have drawn from their study of anthropological science conclusions more or less opposed to the idea of multiple points of origin. Time was when the sole object which stimulated faction-fight was the “when” and “where” of human genesis.

Man at that time appeared, to the majority of observers, a creature endowed so differently to all others, that the nature of his origin excited no controversy. Gradually, however, the great issue has been changed; the "how" must be answered before it again becomes necessary to write books showing, from external manifestations, the probabilities or improbabilities of primordial radiation.

The theories of human origin, which now compete for the favour of the scientific world, may be thrown together in three or four classes. Of these, the oldest and most generally respected is that which, accepting the definition of the term "species" as it was settled by the fathers of zoological science, regards it as representing, not merely an established ordinance of nature, but a "divine idea", and attributes the generation of the forms included within its impassable limits, to evocation out of nothing by the fiat of the First Cause. With every desire to avoid disparagement, it may, perhaps, be said that this opinion is held by those who have either paid no particular attention to biological inquiry, or are under the influence of extra-scientific prepossessions. The same tenacious faith in the reality of the thing called species is, however, compatible with a totally different explanation of its origin, proceeding from men who claim to reason only on physiological grounds. According to this account,—which is, as far as its present office is concerned, the materialistic,—the primary origin of species is simply due to those chemico-vital energies of matter which are known to cause the subsequent development of the individual, and continuation of the specific organism. But, of late years, the sharp outlines which defined the idea of a species, have nearly faded from the minds of many able investigators, and in the school which they have founded, the word remains as little more than the convenient expression of the systematist, bearing the same value in respect to nature as that of genus, family, or order. They who sin most deeply against the venerable and, as we are warned, most fundamental principle of zoology, are those who have undertaken to explain that gradual elevation of organised forms which is undoubtedly visible, on the large scale, to the geological eye. If we must believe the transmutationists, as they are somewhat irreverently called by their opponents, no distinct origin whatever can be assigned to the conventional group termed a species. Since the hypothesis with which we are required to start endows every organism with a tendency, or at least a potentiality, of changing its form under the pressure or permission of changed conditions, and since conditions are always changing, the species of yesterday may, or rather must, become the different species of to-morrow. Accepting this explanation of the rise of existing species, in whatever sense the term is

left to us, it is clear that the actual origin of them all has to be sought at an immense distance of time and organisation. But when we yield to the guidance of the theory, and are conducted down the long line of life until we reach its ultimate limit,—when we contemplate our almost structureless first parents, and ask what gave them birth, our Mentor is silent,—it is not as yet the province of development to trace the origin of the living point. If on this subject we question the advocates of that theory, they break up their bar, and speak as theologians or materialists. Some of them, however, are among those who endeavour to steer a middle course between these extremes. Believing that reasons can be adduced which, though not experimental, are sufficient to prove the existence of immaterial, or at least insensible being, conjoined with ponderable matter, they are led to ascribe, with more or less confidence to this “principle of life”, the production of living beings, as a consequence of its association either with preexisting organisms, or with so-called inert matter ripe for organisation. The life-principle itself is considered to be by some the creation of, by others an emanation from, the Universal Spirit. The organic matter necessary for its sublunary manifestation has, in controversial exigency, been declared to be the primitive form of matter itself. Both life and organisation are thus created mysteries, totally beyond the pale of human comprehension. Unless some other theory be found to satisfy the inquiring mind, it will be wisdom to accept this without attempting to understand it, until that time arrives—which appears to be anticipated by a celebrated anatomist—when we shall possess “powers of penetrating the problems of zoology, so far transcending those of our present condition, as to be equivalent to a different and higher phase of intellectual action, resulting in what might be termed another species of zoological science.”* Meanwhile, it may be as well to consider whether all other theories are so palpably false as to render it necessary for us to wait for more elaborate brains.

The general and the specific origins of life are, in reality, two distinct issues; but the considerations relevant to each are so intimately connected, that it is not advisable to attempt to give them separate attention.

Since the theory of development denies the definite origin of species, on the one hand, and on the other does not profess to throw any light upon the primitive birth of life, the question compounded of these two particulars rests, in the first place, between those who think that the production of life required the immediate action of the First Cause; and those who consider that the natural forces, which

* Owen, *Comp. Anat. of Vert.*, preface, xxxvii.

we are accustomed to call secondary causes, were equal to the task. Though we may possibly shrink from so blunt a statement of the matter at issue, it is our duty, as candid inquirers, to look it boldly in the face, and decide the question impartially, whatever sacrifice of early prejudices the decision may call upon us to make. We have to determine between creation, in the ordinary acceptation of the word, and evolution,—to say whether the production of living organisms, by the immediate act of the Deity, be a proposition probable in itself, and consistent with the present state of knowledge; or whether the organic has been evolved, by natural processes, out of the inorganic. It does not appear that any *à priori* reason, arising out of the nature of organisation, can safely be given in favour of the former of these opinions. The line of demarcation between compounds of the elements in an organised and unorganised state, though not absolutely obliterated by the modern chemist, has been of late greatly attenuated; their comparative rank in the system of nature will certainly not justify the idea that one composition may be readily effected, the other be totally impossible without Divine interposition. If, therefore, we assume the position of advocates for organic creation, we must fall back upon extraneous reasons in its support. These appear to be two,—the authority of revelation, and the concurrence of human tradition as to human origin; but these two are in reality one. If the former prove, on sober reflection, to be untenable, the latter at once falls to the ground, since no man could know that he had been created by the direct exertion of the Deity, unless it had been revealed to him; the concurrence of tradition, assuming that there is such a thing, testifies, therefore, not to the fact, but to the belief in the revelation of the fact.

We will assume that this belief has spread from a single source, and that the biblical account is an inspired production,—we will consider it to have been, as it undoubtedly was, intended to be taken in its literal sense. It is at the present day universally conceded to science, by sensible interpreters, that the bible was never meant to teach natural history, or any other kind of secular knowledge, formally or indirectly. On such subjects, its statements—sometimes correct, sometimes incorrect—were always adapted to the intellectual acquirements of those to whom they were addressed, and necessarily so, for otherwise they would have been utterly unintelligible. Whether we are of opinion that Moses was the inspired author of the whole of the Pentateuch, or that its first section, the *Berayshith*, is composed of narratives from Chaldaic pens still more ancient, in either case the genesis was described to people who—in common with all those, especially of the east, who claim a national ancestry—attributed their origin

to the gods. Before an audience totally ignorant of anything relating to the subject but themselves and the ultimate operator, to refer to creative processes would have been not merely useless, but an infraction of the scheme of inspiration, which we now know excluded mere philosophical knowledge. No doubt a Creator can be imagined to work without means; but the question is not what he might have done, but what he did; and the silence of the Bible is an argument neither for nor against the use of whatever means were naturally required for organising purposes. Unless intermediate agencies are expressly referred to, we have a mental habit of vaulting over the interval of thought which should be occupied by them, and speaking of an effect and its ultimate cause as directly related. At the present day, for example, coroners' juries, who always proceed on the principle of taking *omne quod ignotum pro magnifico*, would, if required to sit upon a new human production, solemnly pronounce "born by the visitation of God"; and everyone who believes in a First Cause may, popularly speaking, refer to it as the original producer of his own and other organisms, even though he be persuaded by post-Chaldaic science that a train of secondary causes have, in reality, intervened. The ascription of life-production to the *Elohim* immediately, only proves that the Jews or Chaldeans were not *savans*. If then, tradition, without previous revelation, is of no value, and revelation in that age of the world necessarily omitted unintelligible particulars, the mode of organised production is left an open question, to be freely discussed even by those who are sincere believers in the divine legation of Moses. But we shall here be met with the assertion that, whatever may be the case with other parts of the world of life, man stands upon a totally different footing; in other words, that the secondary causes, which might have been sufficient for the generation of brute nature, though themselves emanating from the Supreme Good, were altogether unable to form an image of that Good. This is a perfectly gratuitous assumption, to which replies in abundance may be concisely given. In the first place, if man's superiority be held to consist in a special immaterial principle, it may be said that the Creator was as able to produce the immaterial out of the material, by certain means provided by himself, as he was to produce the material out of nothing by other such means. It is equally reverential to the First Cause, and more so, to believe that he worked by his own ordinary laws, as to suppose that he created man by special patent. The Jewish record nowhere asserts explicitly that there is a difference between man and lower animals, so essential as to require a different source of derivation. The origin of the phrase "image of God", has been already explained. Being thus left dependent upon

investigation, we find that the difference between organised and unorganised compounds is insufficient to render the conversion of the one into the other supernatural, although at present it may be superhuman. As the tendency of discovery is to identify the forces which regulate their respective existences, we have therein presumptive evidence that the forces under which they commenced were radically the same. We know nothing of production without a natural medium; and it is therefore unphilosophical, without necessity or proof, to attribute organisation, human or other, to causes beyond experiment. The advocates of the sufficiency of natural modes of organisation, expose themselves to the declamatory charge of seeking to deprive the Deity of the glories of creative work. The odium is utterly undeserved; for until it is asserted that matter could be self-creative, and the forces belonging to it self-productive, the true dignity of the First Cause remains intact,—nay, increased by the superior homage we must pay to the agent endowing matter with the power of accomplishing its highest destinies.

The most sincere upholder of Divine Intelligence may therefore, without repugnance, take part in the inquiry now remaining, whether organisation be the product of efficient agencies, alien to those which cause the lifeless combinations of matter; or whether both of these may not, with better reason, be ascribed to causes identical in their nature.

Of late years, a very important change in the mode of viewing the phenomena of life has taken place in the minds of those who, being most intimately acquainted with all that relates to the living tissues, are most competent to form a reliable judgment. Like all scientific truth, the doctrine of vital operation, which is now commanding the assent of the physiological world, has passed through a severe ordeal of crimination, in addition to the more legitimate trial of criticism. It has, perhaps, been peculiarly unfortunate in its power of touching to the quick the prejudices of that class of scientific men who are unprepared to substitute new inductions, however palpable, for old habits of thought, however unphilosophical they may be demonstrated to be. It is not difficult to reach the source of the hypothesis which, until a comparatively late period, occupied the place of an intelligent comprehension of the nature of vital reactions, and thereby greatly impeded physiological progress. Aristotle conceived, first, that the whole world was provided with a principle of vitality,—an intelligent being, or *Ens*, whose office it was to superintend the origination of every form of organisation capable of earthly existence, and so to regulate the proceedings of each as to produce those harmonious results which have been the theme of admiration to reflective man in all

ages. Second, that an emanation from this universal "soul of the world" was localised in each distinct organism, forming a subordinate soul, to which was committed its individual welfare through all the stages of its life, and which he seems to have regarded as the cause, both efficient and final, of its beginning, its perfection, and even of its corruption. But the animating principle of the individual organism was not, according to the great philosopher, a homogeneous entity, but a composite being; one portion of the whole *psyche*, the *nous*, or mind, being so far separable from the rest as to be capable of existing independently of the body: though, during life, in intimate union with the *psyche*, and forming with it the total "animating principle." These two beings, thus invented, were received by philosophising Jews, adopted by Roman sages under the names *Anima* and *Animus*, consecrated by the Fathers, illuminated by doctors of the dark ages, and, finally, appear to the popular mind—innocent of knowledge of Greek conceits—as expressions of divine truth. But though the distinction thus made between the compound *Ens*, in charge of the whole man, and the constituent which was invested with the glories and responsibilities of its spiritual existence, has been handed down to our days, and accepted in the popular doctrine of a conjoined "vital principle" and "mental principle", building up and actuating the body, its adaptation to the revelations of science has not been effected without extensive modification. It is now rarely held that the two "principles" are in their nature even temporarily identical. The different results of their labours in life, proved to the minds of those who believed in them that they were separate beings. The "vital principle", raised to an independent existence in the body, naturally received a further accession of dignity; its adherents could not resist its logical claims to be considered capable of preserving its individuality when its connexion with the body and the mind had ceased; and though some hesitated to go so far, and contented themselves with vague ideas that its existence was, in some way or other, dependent upon that of the body, the general result was (according to notions now in course of explosion) that the body was patronised by as many tutelar godlets, in proportion to its wants, as were the contending hosts of the *Iliad*; and the products of the dissolution of this imaginative partnership could be described in Horatian verse,—

*"Terra tegit carnem, tumulum circumvolat umbra,
Orcus habet manes, spiritus astra petit."*

The whole doctrine of an "animating principle" comes to us, as we have seen, from the porticoes of Athens; but the innovation which conferred immaterial rank upon the "vital principle," arose from an unwarrantable, though oftentimes unconscious, abuse of terms in

modern physiology. In the progress of research, numerous phenomena presented themselves to the investigator of the constructive, adaptive, and reparative properties of the tissues; and, as they accumulated, it became more and more obvious that they were all produced in obedience to law. It was assumed that all were referrible to one and the same energy, and as none of the known forces of external nature appeared competent to bring about effects so mysterious, a convenient expression was required, not, indeed, to define the nature of their cause, but, as was professed, merely to serve as a nominal bond of union, and to obviate the necessity of periphrasis. The metaphysician (sometimes the same person with the physician), was at hand with a long established term useful for the purpose, and "vital principle" was transplanted into the language of the physiologist, who constantly protested that he did not employ the term in any theoretical sense, but merely as a provisional name for a set of reactions of whose causative stimulus he was ignorant. The process of transferring to a denomination the properties and powers of a concrete being was once more strongly illustrated; even in the course of a single volume, "vital principle" forgot its modest rank as a *vox et præterea nihil*, and asserted its substantiality as "the vital principle," to be ultimately debated about and fought for with all the reverential zeal inspired by a dogma. It was not, however, to be expected that the acumen of science would long be imposed upon by a feat of verbal juggling; not only has the expression been reduced to its pristine insignificance by frequent exposure of the unphilosophical nature of the hypothesis built upon it, but the necessity of using it at all has been swept away by the discovery of the protean modifications of which the material energy is capable, by the recognition of the slight difference between some products of the laboratory and others of the organising processes, by the knowledge, that in both cases the same combinations may become the subjects of analysis and recombination, though the products may be different; that the same polar disturbances ensue from chemical and vital reactions; that the processes are carried on in dependence upon the same physical properties, as elasticity and endosmosis, and that there is no such a thing as "inert matter," motion being the common property of inorganic and organic substances. It is true that a living cell has never yet been produced by the chemist; it is equally true, that a crystal has never been formed by magnetism, yet, we know that magnetism is but a modified form of galvanism which readily determines the formation of crystals. It is evident, therefore, that the general tendency of observation is to identify the physical and vital energies with each other, and on the other hand, no observations have been recorded essentially antagonistic to that identity.

This progress, in our conceptions of the nature of vitality, produces, amongst others, two effects important to our present purpose. Any interest we may feel in prosecuting the investigation of life to its fundamental issue is greatly invigorated, and at the same time, the probability of obtaining from that investigation a reliable result is increased or rather created; while vague notions that life processes are due to the power and intelligence of an immaterial medium were in the ascendant, it was clearly absurd, not to say blasphemous, to attempt to trace the stream of life upwards, in time, with intent to explore the hidden springs of its origin. Now, however, that the conviction is becoming settled, that life in its several organic manifestations is but the natural product of natural operations, we may, perhaps, be allowed to pursue our course uninjured by invectives such as those which have been hurled against the organic chemist for presuming to stretch his profane hand towards the sacred fount.

But, however fully persuaded we may be by physiological facts, that there is nothing in the nature of vitality which requires the intervention of a special agent, there is another class of observations which may tend to confirm, though, in itself, insufficient to form that judgment. Few subjects have excited greater interest, perhaps enthusiasm, among a certain class of experimenters, than the supposed possibility of organic formation without the preexistence of a germ. It is unfortunate for the credit of science, that the term "spontaneous generation" should have been adopted for the expression of the expected phenomenon. There are, undoubtedly, many impressed by it with the notion that science thereby attributes to organisation a power of volunteering itself into existence; whereas, all that is meant, is the possibility, that under certain conditions artificially procured, vitalisation may be set up in unorganised materials independently of known methods of germination. That such must have been, or still may be the case, more or less frequently under conditions supplied in nature, is the only logical conclusion possible to those who see in life developments but the evolution of a material force, for no reason can be given why the primal initiation of life should have taken place under laws different to those which govern its after course. The only permissible doubt, therefore, is whether those natural conditions can be reproduced by experimental arrangements. This is a problem surrounded by peculiar difficulties, in number and magnitude sufficient to tax ingenuity to the utmost. The experimenter, in brief, has not only to provide the necessary means for the production of organisms, but to effect this in such a manner as to satisfy the most captious objector that germs of all kinds were utterly excluded. It would be rash to affirm that the two requirements will never be

fulfilled; it would be equally rash to say that the approach made to the realisation of the object in view has in any instance been sufficiently near to justify the assertion of its practicability; of the many examples of extragerminal production adduced, few, indeed, have been subjected to a competent scrutiny, but the common result of these examinations—vitiation of the conclusion sought by imperfect isolation from germ-bearing media,—establishes a presumptive case against the rest. The materio-vital theory has not, therefore, received from this method of investigation an absolute demonstration of its truth; it is, indeed, probable that its general acceptance will be the result of observation rather than of experiment. But, though a decisive answer has not been given in its favour, a candid examination of the circumstances in which many of the experiments have been conducted, leave little room for doubt that the probabilities of the presence or absence of germs were in those cases about equal; while in a few others, the balance of evidence seems to preponderate on the side of the latter. Even if we hold that the whole of such experiments have hitherto offered no encouragement to those who relate vital effects to the productions of other material reactions, the burden of proof to the contrary, rests with those who see in the asserted failure a refuge for their destitute "vital principle." On the other hand, whatever practical reason for doubting the truth of that assumption arises from the investigation, it gives the whole of its authority to the opponents of the immaterial hypothesis. It may, indeed, be objected that the most decisive instance of extragerminal production would not, of itself, overturn the opposite opinion, unless it could be shown that the immaterial agent itself was incapable of coming into practical existence together with and under the conditions necessary to the organism appropriated to it. It will not, however, be necessary to discuss such a question seriously, until the mode in which a "vital principle" originates or obtains a settlement within an organism be definitely conceived, reasonably established, and generally accepted—until we are educated to perceive, either, that it is by a creative act, as occasion requires, by the incarceration of one of the principles supposed by some to be floating in the air ready for use, by the continuity of the "principle" of the new born with that of the parent, or by union of the male "principle" with that of the female,—while those who are versed in the natural history of these creatures, find these little matters beyond their powers of explanation, persons of feebler imagination would not be justified in attempting the solution of problems with which they have no concern.

When, then, we become acquainted with the original source of the popular and lately scientific notion, that there exists within the body

an immaterial medium of organic life,—when we perceive that the hypothesis, at its introduction into physiology, did not even pretend to a foundation in fact, that it is surrounded with difficulties and absurdities, and that it is an utterly unnecessary mystery-making about matters purely inductive and referrible to known laws,—we cannot hesitate to condemn the hypothesis as wholly unworthy of the present state of knowledge, and further, to ascribe the origin of organisms to the modification of material force which produces the subsequent effects of generation and development. It is by no means necessary that we should be at once able to determine the exact nature of the vitalising force or forces, or to point out the other modifications of force to which it is most intimately related. We are informed by the sun's rays of the quarter in which it will rise, long before we can examine its disk; and other forces, whose modes of action are now fairly known, long baffled the investigators of their correlation. In the present case, the effects are infinitely more complex and diversified, and partial ignorance of their source is not a reproach, but a stimulus; while confidence that we are seeking in the right direction, is a strong encouragement.

But if we accept without hesitation the general truth of the proposition, that organic beings are the effects of some form of the physical force, we naturally ask, Does this offer a satisfactory explanation of the origin of mankind? Can the production, as well as the maintenance, of every degree of organisation from the vegetable monad to man, be attributed to this as its direct cause? It is from the combined testimony of geology and physiology that we can alone hope for a reply. The life-history of the earth, revealed by the former, assures us in unambiguous terms, that the life of the individual is, in its great features, repeated in the career of all natural aggregates, from the least in extent to the greatest of those whose whole course can be traced in the deposits. Each of these is seen, more or less distinctly, to have had periods of life,—cycles of development, following each other in regular succession, and homologous with those of our own birth, immaturity, adolescence, and prime, with their constant sequelæ, decay and dissolution. If, then, at several points in the existence of such groups, we perceive that it has undergone changes, which are attributable only to processes similar to those which bring about similar results in the individual life, it is difficult to avoid believing that the commencement, both of the individual and of the group, has been effected by the same methods. The life of the individual, at its origin, is simply the vitality of a single cell, which is either gifted with the faculty of so modifying the action of a uniform vital force, as to allow the development out of itself of a

perfect exemplar of the species to which it belongs, or being itself passive, of receiving the impression of whatever modification of that force may be necessary for such development. The question is, whether the life of the first individuals of a natural aggregate commenced in its adult or primitive cell condition ; whichever conclusion we adopt with regard to the unit, should be transferable to the numeral. Among those who recognise some form of material energy, whether purely chemical, physical, or resulting from any of their combinations as the efficient cause of life, some are of opinion that organisms have been brought by it into existence in their highest stage of development. But when we contemplate the exceeding complexity of structure which obtains in animals comparatively low in the scale of organisation, and the great diversity in the functions and products of their tissues, when we reflect that there is no real analogy between such combinations of many proximate principles and the constitution of the most intricate substance obtained artificially by organic chemistry, we cannot suppose that so vast an amount of elaboration has been accomplished by a single process. This would be to imagine an extraordinary substitute for that gradual building up and consolidation of the fabric which require for their completion continuous operation during definite periods of immaturity. Such an occurrence appears rather supernatural ; and, unless this is a mistaken view, it is necessary to withhold assent from the doctrine that mature forms of organisation, at least of the higher types, have been produced by the direct action of physio-chemical forces. It seems as reasonable to imagine that the steam engine in its working state is a single casting of different metals, effected by a mode of operation which is certainly employed in the formation of any one of its parts. Rejecting this idea as inconsistent with the constitution of adult life, we cannot, of course, regard any other stage subsequent to the initiatory one as more probably that in which formative action was primarily set up. It is, indeed, only in rudimental structures that we find the simplicity which alone appears capable of proceeding from extraneous sources. We have now to consider how this view of organogeny can be extended to group-origin. It may be said, that if we refer life origin to the germinal cell of the individual, and regard the adult as its development, the same idea must, by our own analogy of the individual to its group, be extended to all natural aggregates : that is ultimately to the whole animal, and, indeed, vegetable kingdom. A conclusion, which is really that of the Lamarckian theory, pure and simple : a primal monad at the base of the whole series. Such a termination of the argument is certainly plausible, and were the theory of uniform development from the lower to the higher more

agreeable to observation and consistent with principles at present accepted as sound, we should not hesitate to adopt it. But geology bears unflinching witness to the fact, that the progression of life forms has not taken place by consecutive steps of ascent. Certain forms, or groups of forms, persist in making their appearance before their proper time, and disappear before others inferior to them obtain their systematic characters. Zoology, likewise, testifies that the view of natural affinities on which the doctrine really leans is not tenable. Organisms are not capable of being arranged in that linear order which would appear to be the necessary result of the continuous eduction of one structure from another. It, moreover, is a contradiction of our ordinary conceptions of the operations of nature, to suppose that the production of life has taken place but once in the world's history. Our experience of nature, the foundation of all reasoning upon such matters, tells us that frequency, repetition, is the law of laws; that the material forces are continually at work, and their effects constant. Finally, we must dismiss this explanation of group-origin in the form usually presented, because, amidst all the destruction of old prejudices and transmutation of new, caused by discussion for or against the theory, permanence of type during definite periods stands erect and unharmed; no fact inconsistent with its elasticity, by which is meant its power of stretching and returning to its original condition, has been adduced from the past or in the present, able to shake our confidence in its truth.

But what is the alternative? If we say that there has been but one mode of life production for man and brute by the action of material forces; if we say that the result has not been a state of maturity, but the first steps of specific life; if we further say that the difficulties in the way of believing that the evolution of life on the large scale can in anywise be considered a uniform ascension, are insuperable; then it would appear that the sole resource left to us is to adopt the presumption that the conditions necessary for organised life have been so arranged as to allow germs of a special nature, that is capable of evolution into special forms, to be produced and sufficiently developed for the ultimate establishment of the group whenever its existence in the natural system became requisite. Have these germs arisen in dependence upon, or unconnected with pre-existing organisms? There is a very obvious objection to the latter supposition. Recurring to the ordinary method of individual origin, we know that the early stages of development out of the germinal cell take place in most, if not in all cases in continuity with, or at least in attachment to cells of the parent. If, then, life were first established in an independent germ,

how could embryonic development have gone on without embryonic surroundings? In the case of an inferior type, especially one of those inhabiting fluids, it is not extremely difficult to suppose that a germ might be produced and the ovum developed from surrounding materials sufficiently to enable the new animal to commence its automatic existence. It would not be altogether safe to say that in the case of some oviparous classes the process would be altogether impossible; but amongst viviparous animals, and those whose egg-born young depend upon parental support, such an origin of new species seems quite inadmissible. By way of evading the difficulty, much might, perhaps, be said about our knowledge of numerous animals which are evidently embryonic stages of higher structures, although they pass through the complete cycle of life; the metamorphic changes taking place in many invertebrates might similarly be quoted as examples of fetal development in a separate state. But in the latter case, the caterpillar and butterfly, for example, are one and the same individual; in the former, the proteus for instance, is embryonic only in a general sense—it is an unchanging type of imperfection. These examples, therefore, are very far from removing the difficulty before us. In reference to man, for instance, we should have to assume that there have at times existed human embryos and infants in the literal sense, so situated as to be able to pass in the usual methods and periods from that state into one of maturity. It is, of course, unnecessary to say that observation and reason are alike wanting in support of such an idea; and, indeed, it seems to involve a greater miracle than the immediate production of an adult by external agents.

If the chemico-physical theory prove itself inadequate to account for the rise of both the germ and the adult, we have, as it would seem, no resource but to attribute specific origin to some process of organic evolution. The conclusions to which we are led by the theory of development as it is usually presented, are as we have seen, too inconsistent with the facts of Zoological science to permit their acceptance. The great principle on which the theory is based, the tendency to vary, is within due limits a sound one; the companion principle, the tendency so to vary as at the same time to elevate by permission of circumstances, is at present open to great suspicion. That a disposition, or an impulse to vary does exist in the organised world in much greater force than was formerly admitted by naturalists, is incontestable; it is not, however, its prevalence, but its intensity which forces it upon our attention. The indubitable fact, that it is sometimes manifested very strongly, has given birth to the hasty assumption that it is the common property of organised life; but

the truth seems to be, that it is possessed only under certain conditions of life. There are numberless cases in which not the slightest tendency to throw off varieties can be detected. The suggestion that this failure is due to uniformity of circumstance, is not only purely hypothetical, but rendered very improbable by the fact, that a species will frequently exist under different local conditions without exhibiting a proneness to vary. The presumption that there is a centrifugal force constantly tending to enlarge the organic radius rectilinearly, and compelling every species to struggle to differ from its prototype in the ascensive direction, appears to be without sufficient foundation in nature. It is an unnecessary hypothesis if a probable account can be otherwise rendered of the variability which is displayed by certain groups. If we carefully and comprehensively examine the natural history of most of those species which possess the greatest amount of variability, we find that this tendency is but one of several concomitant characteristics analogous to, if not identical with, those which belong to the individual at the most vigorous period of its life, that is, at the most typical phase of its personal development. But the naturalist is well aware that in an organised group the most typical portion is by no means the highest in point of general structure. If, then, we concur with the advocates of development so far as to derive the origin of one group from a germ given off by another, we are forbidden to look to the most highly organised part of the parent group as the source of the new development; but to that which is the most mature relatively to the other members of the group, and by virtue of its maturity, the most procreative. May we not suppose that the power normally possessed by the most typical form may occasionally be intensified by extraordinary vigour, or by some constitutional peculiarity; and that germs of higher, but cognate characters may be thrown off when requisite from the surface of a type, while the type itself is (not transmuted, but) passing onward through its regular stages of life. Looking at variability as one of those physiological characters of adolescence which comprise amongst them a greater amount of adaptability than is possessed at any other period of existence, we cannot regard its possible effects in pushing out new types as eventually dependent upon external conditions. The typical characters of each natural group are retained even by those species whose decadence shows it to be in the last and feeblest period of its existence—a conservatism which appears incompatible with the elevation of a type by transmuting influences around it. Few, indeed, will dispute the truth of the principle which lies at the base of the development theory; perhaps no one, from the biblicist to the materialist, will deny that some force is, or has once been at

work whose effect upon the general economy of life is ascensive change—the effect is patent, it cannot be causeless. In the ordinary view of development, we contemplate this force acting directly upon the animal through the channel of external conditions,—we are told, that of the numberless accidental varieties which every type may constantly produce, those only succeed which happen to be suitable to surrounding circumstances, somewhat as though the flight of the rocket were generally due to the chance spark from a catharine wheel. The theory has many recommendations ; but it creates more difficulties than it explains. If, instead of a lawless appetite for mutation, it be possible to substitute a power of expansion exerted in, and as an element of, the prime of specific life—if we may reject the fortuitous slave of local circumstances in favour of an expanding germ of the old form, evoked in consequence of its general congruity with the life conditions and fellow beings of its period, we shall, perhaps, have lost nothing that development can give us, and gain much that is wanting to Darwinism,—the countenance of physiological experience, and the satisfaction of recognising order in the operations of life. To some, it may appear a recommendation of this mode of accounting for specific origin, that it relieves us from the necessity of ascertaining each minute grade of ascension between forms next akin and yet far removed. The germ, which, from whatever cause receives an impulse towards permanent expansion may be thus enabled to produce a being considerably higher than its parent ; and, as in the case of the lowest existing man and the highest present ape, intermediate forms may have been passed over in the embryo. But the probability that such has really been the mode of human origin must depend very much upon the age to be attributed to the earth and apes of the present day. Is that aberrant group immature or decrepid ? If it has buried no records of a life superior to that in which we now observe it ; if the number of its individuals, varieties, and species has never been higher than now ; if its elasticity under the strain of climate was never greater ; it is difficult to suppose that it has had vigour to throw off a new type so far in advance of itself. But the present apes give tokens that they are in the stage of natural decay ; the scanty relics of old world quadrumana do not indicate a more feeble life ; and it is, at least, impossible to say that the present groups are not the perishing remnants of the ape-folk of pliocene forests. Yet, until we have learnt that the group enjoyed its meridian of life when man first placed his heel fairly on the ground, all relation of origin between the two is merely conjectural, incapable of being moulded into a well favoured opinion. In such uncertainty, however, all views of human origin, except those of unreason, are at present involved. The tangled

skein of nature will require many a year of patient unravelling before we can trace the threads of life from end to end. It will be well, in this behalf, to do our spiriting gently. Prejudice and loud assertion make lingering haste—they pull out the slack but tighten the knots; modesty is our “only wear,” work and wait our safest watchword.

THE FORMATION OF THE MIXED HUMAN RACES.*

By M. de QUATREFAGES, Professor of Anthropology in the Museum of Natural History, Member of the Institute, Honorary Fellow of the Anthropological Society of London.

The Crossing of Races in the New World.—“South America,” says M. Perier very justly, “is the great laboratory of the modern mixed breeds or hybrid nations.” Let me add that Central America and Mexico, in this respect, may be placed upon nearly the same footing as the more southern countries. It is especially interesting, then, to study out in all their details the results of the vast and varied experiments which have been worked out, or better still, which are now only commencing upon this extended field. And it is precisely this that M. Perier has done. He has collated an immense number of papers, and has examined the questions which they suggest. He has considered successively the origin of the Mestizos, the Mulattoes, and the Zambos, but we cannot follow him into all these details. We will content ourselves with some general observations.

M. Perier recognises the fact, that in the crossings of races the inferior is bettered, and acquires a relative degree of superiority. But, according to him, this elevation is purchased only at the price of a degradation of the superior race, so marked that in fact there is a deterioration in the population.

Now, even by taking the facts as he presents them, I see no reason for accepting his conclusions. Evidently, M. Perier, in forming his judgment of the mixed races, takes for his standard of comparison a European of pure blood, as he is, or rather as he ought to be, among ourselves. He fails to bear in mind the real point of departure or standard of comparison, i. e., the Creole. If our author had only

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applied to the mixed races the same considerations which some pages further on he has made in the case of the white colonies, if he had only remembered who the parents were, he would have been, I think, less severe on the children. He would have been still more indulgent if he had taken into account the moral and social condition in earliest infancy of these classes of society, too often the children of debauchery on the one hand, and on the other of degradation. Generally in America the white man despises alike the native and the negro; the native in turn regards the negro as beneath himself. The offspring of these different races are almost always and necessarily outcasts. What else could that be which is born and raised in reproach? Is there among the purer white races any stock whatsoever that preserves under such circumstances an elevated and moral position? No; and from these two points of view man will always be degraded by reason of the contempt which will be heaped upon him. This simple observation explains why it is that the Zambo, an intermixture of the Indian and the negro, is generally conceded to occupy the lowest position in the scale as regards these two points.

Perhaps I ought to say something concerning the mixture of the white man with the native American. Here the facts are so well defined that it is necessary to lay special emphasis upon them. This race plays, in Mexico and other places, a part undisputed, and for that matter indisputable; in many respects indeed it constitutes almost the entire active classes. Some of the men who have exercised the greatest influence upon the destinies of their country have belonged to this class. Has its influence always been a happy one? Certainly not; and that which is now transpiring in the South American republics only tends to substantiate this charge.

But this aspect of the question should be examined separately, and we will revert to it again.

Let us continue to accept without question (and this we may readily do) the facts as M. Perier presents them.

Now the mixed races in question are charged with physical degeneracy! But the very authors quoted by M. Perier seem to me to be almost unanimously of the contrary opinion. Those of them who have drawn the least favourable sketch of these races, have depicted them as "robust, indefatigable, sober," (Max Radiguet.) Some, moreover, declare them equal and even superior to the pure-blooded whites, (D'Orbigny, Martin de Moussy, d'Azara, etc.) And the oral proofs which I have received fully confirm these estimates, (César Daly, E. Reclus, etc.) Bear in mind, too, that they (as well as their indigenous ancestors) are wholly acclimated, and their rapid multiplication will astonish no one. We shall then understand the foresight

of those who look upon this race as destined to become nearly if not entirely the governing class in certain parts of South America.

While I allow my own opinions to be influenced by M. Perier's, I meet with no traveller who states that the mixed races are notably inferior to the whites as respects intelligence. The most critical of them acknowledge that they have "much of intelligence, spirit and imagination," (Raynal, Perier.) But in general, the charge made against them is in the use they make of their faculties. They are almost everywhere indolent, passionate, and addicted to gaming, always ready to foment civil discord, etc. Admit it, but let us compare this estimate of their moral character with that which M. Perier has drawn in the case of the Creoles, and still again, the distinction between the pure bred white and his descendants, too often disregarded, will not appear so very great. This is, moreover, a question the consideration of which we shall resume farther on.

M. Perier devotes a special chapter to the Paulistas (inhabitants of the Province of St. Paul, in Brazil.) With pleasure do we follow him into this field, but at the outset we must correct some of his statements of fact regarding the origin of this celebrated people; facts accepted without qualification by the author, although coming from prejudiced sources, as M. Ferdinand Denis long since pointed out in his "History of Brazil."

The Paulistas did not in their beginning spring from the unrestricted and unlicensed intercourse of the roving bands, of all sorts of ancestry, with the native American women, (as stated by various authors cited by Perier.) These first intermarriages were not forced by violence; quite the contrary. The founder of the colony, Alfonso da Souza, in connection with some Portuguese, to whom were also added a few families from Azores, established himself without violence in the midst of the Gayanazos, a native race, at that time peaceable, and devoted to the chase. As they increased, this colony allied itself with the Carijos, a warlike and cannibal race, but also cultivators of the soil. Such were the elements concerned in the formation of this mixed race.

But it is important to remark, that from the very first the mixed marriages brought about by this coalition of races were regulated by the advice of Fathers Nobrega and Anchieta, who were the apostles of Christianity in those countries. Moreover, their common dangers united intimately the whites, who remained unmixed, and the Mamelucos, who were the result of the interbreedings. As for these last, their moral and social status was here quite different from what obtains in other places. Almost from the very commencement of the colonization they were regarded as the equals of the Europeans, and in this

instance they escaped the arraignment of the law which in certain cases is carried so far as to interdict regular marriages among the crossbreeds, and to condemn them to that life of debauchery which subsequently becomes their reproach.

What has been the consequences of a state of things so rarely realised? It is just that which M. F. Denis so strongly depicts, and his testimony is confirmed in most points by the very statements of the most bitter enemies of the Paulistas. So far as concerns their physical characteristics, no one denies to this people a remarkable muscular strength, and a power of resisting fatigue to a very extraordinary degree. The women are acknowledged, even in Brazil, as superior to all others of their sex. The men are remarkable for the general expression of their countenance, and for the fire of their eyes, which are usually brown, and but rarely blue. "Some families in the province of St. Paul have kept themselves free from all intermixture, and they love to call attention to this exceptional position. We can say, however, that these are not the ones who are noted for their beauty." (F. Denis.) Morally, everybody recognises in the Paulistas a rare energy, an indomitable courage, and a spirit of enterprise which equals, if it does not surpass, all that displayed by the European conquerors of the country. They have given evidence of these qualities from the very outset, and that too in agricultural labours as well as in the adventurous undertakings I am about to relate. No sooner had they increased their numbers in the plains of Piratininga than these places were put under cultivation unknown in the other districts. The sugar-cane brought from Madeira was cultivated first by the Paulistas, and they were the first also to raise large flocks, which became to them a source of wealth.

But, as is well known, in the sixteenth century people of such a nature and disposition as this would with difficulty settle down to peaceful occupations. Their institutions and customs permitted others. Traffic in negro or Indian slaves was authorised; the search for gold was esteemed an occupation worthy the bravest of their leaders. Thus these two pursuits became a favourite occupation of the Paulistas, and in them they accomplished wonders. United into little companies, each of which was commanded by a tried leader, they extended their forays from the Amazon to Paraguay, in the face of a thousand dangers from the country, the vicissitudes of weather, and the people. From these excursions they returned with thousands of slaves, whom they put to work in cultivating their fields. One of the most celebrated of these bands of the seventeenth century reckoned upon its lands a thousand Indians capable of military duty.

In these raids, it is pretty clear that the Mamelucos of St. Paul

showed that they were no more humane or refined than were at that time the pure-blooded Spaniards, who, if occasion demanded it, chased the natives with blood-hounds; that they were no less unscrupulous than in our day are the Circassians and the Tcherkesses, when they make forays into the plain. Above all, made ferocious by the very terror which they appeared to have everywhere inspired, they respected neither the slaves of others nor of the Jesuits themselves. These last, assailed in their sources of revenue, and seeing their converts removed from their control, and frequently by force, complained most bitterly. They described the Paulistas who robbed them as brigands, and finally induced the Pope to excommunicate all the possessors of Indians. At this turn of affairs the Paulistas drove out all of this religion in their own provinces, and they were then accused of having renounced the Christian religion to return to the local superstitions.

Such, it seems to me, is the truth of the past history of the Paulistas. They were a people peculiar to their time, a people infinitely more hardy, adventuresome and energetic than their neighbours. Unfortunately this people, who were simply children of nature, were attacked on the one hand by educated classes, and on the other by the religious orders, and finally, they were painted in the blackest colours. It is not surprising, then, that M. Perier should have found in the writings of the Jesuit Charlevoix and his associates, as well as in those who repeated their accusations, some exaggerated calumnies. Still we must remark, at the outset, that as regards the imputation of idolatry, we do not find charged against them anything more than was permitted at that time among the most pure-blooded whites.

But, finally, even had the Mamelucos of St. Paul been everything that their enemies represented, it is only just to inquire whether they have remained in the same condition that they were in during the sixteenth and seventeenth centuries. Now, on this point, all the testimony is in accord, and M. F. Denis has merely summed it up when he says: "During the later years of the eighteenth century, we observe a change taking place in the character of the Paulistas, to such a degree, that this active but turbulent people have acquired a reputation only for bravery, generosity, and sincerity, that contrasts most strikingly with the habitual spirit of violence and cruelty observed among the more ancient colonists. At the present time the most happy moral development, as well as the most remarkable intellectual progress, appears to obtain in the Province of St. Paul."

M. Perier accepts this testimony, but he attributes the change to the fact that the Paulistas of our day, crossed and recrossed with other stock, have gradually become assimilated to their European

origin, and have, so to speak, no foreign blood in their veins. I refrain from citing here the so decisive passage which I have already quoted from M. Denis. The comparison between the families of pure white blood, and the mixed, is by no means to the advantage of the former. But I will examine a little more at length this question proposed by my colleague.

To sum up, we see that the intermixture of four distinct races or peoples gave birth, in the province of St. Paul, to a hybrid race, which in physical characteristics was equal or superior to the Creole races that remained unmixed; which governed all the neighbouring races by its warlike energy, in times when war, so to speak, was the normal state; which, changing with the general condition of society, came back to more peaceful occupations, and in peace still preserved its superiority. Does not this fact in itself speak volumes? Does it not show what should take place in a majority, if not in all, the races formed in America by intermixing? Does it not throw a light upon the influence which the social and moral condition, under which a race has its birth, exercises upon the destinies of such race?

It remains for me to say a few words concerning the mulatto, the offspring of the European and the negro. I have already examined this question from various points of view, and I will here lay special emphasis upon the intellectual, moral, and social aspect of the same.

Let me say a single word upon a physical characteristic on which M. Perier has laid considerable stress, namely, the beauty of the women. Long ago we knew, and all travellers have been unanimous on this point, that the mulattoes, quadroons, etc., of our colonies are, in this respect, but little inferior to the more pure-blooded Creoles. From the testimony which I might cite, I will here adduce only that of M. Taylor, whose observations were made in the little colony of Tristan de Cunha. In this island the fathers were all white, either Englishmen or Hollanders from the Cape, the mothers were all negresses or mulattoes. "All the people born in this island are mulattoes, but very slightly coloured, and of most admirably proportioned stature; almost all of them have more of the European than the negro type. Taken together, the young girls were so thoroughly beautiful, both in face and figure, that I do not recollect ever having seen any more so, and that, notwithstanding the fact that I am familiar with all the sea-shore countries, Bali and its Malays, Havana and its Creoles, Tahiti and its nymphs, the United States and their most celebrated women." The physical beauty of the mixed blood of black and white is certainly not to be disputed. Let us then return to considerations in reality of more importance.

Remember, at the outset, that the white and the black are both

foreigners in America, and that the difficulties of acclimatisation, which are there very severe on both races, must exercise, so to speak, a double action upon the product of their union. Remember also under what conditions these unions are ordinarily made, and do not forget the prejudices against colour, so powerful almost everywhere in the colonies. Would it be strange that a race of people formed under conditions so unfavourable should be inferior, in a marked degree, to the superior of the two races concerned in this formation?

Nevertheless, no one points out this evident inferiority. M. Simonot, who, in this question, generally adopts M. Perier's conclusions, contents himself with saying that the mulattoes "are far from realising, as a rule, a physical or intellectual progress proportioned to the races which gave them birth." In other passages, he acknowledges that "among these mixed races we meet with instances, both male and female, of a remarkable type of beauty, and we find also that their intelligence places them on a level with the most perfect of the white race, but these cases are the exceptions to the rule."

The observations I am now about to quote, relate particularly to the crossing of races on the borders of Africa. M. Rufz, who formed his conclusions from what is taking place at Martinique, tells us "from all these facts we are warranted in concluding that the interbreeding of the white and the black races has exercised a favourable rather than an unfavourable influence upon the resultant race." This last testimony, coming from a physician who has scientifically studied the evidence, and who has passed the greater part of his life in the country of which he writes, is all the more important from the fact that the negroes imported into Martinique, as well as into the other French colonies, generally come from the coast of Guinea, and are consequently inferior, as we have already seen, at least to certain of the black tribes of Senegal.

This entirely modern appreciation of the question confirms fully the impression which the reading of the evidence relative to the history of the mulatto of St. Domingo has always left upon my mind. There, the men of colour, as we know, multiplied in a remarkable manner. Had they had the same means of instruction, they would have come at once to an equality with the whites, who were degenerated by idleness and their absolute control in government. In the terrible struggles which they have had to maintain against all parties, we see them displaying a courage equal to that of any white race whatsoever. More than decimated by the blacks, under the despotism of Soulouque, and under the force of threats of extermination made to them by the adherents of Vaudoux, they still had a revival of learning. And if this took on a somewhat peculiar form, the fault, in

reality, must be ascribed to their former masters, who had left in the island scarcely any literature beyond the romances of the previous century and a few volumes of political addresses. Notwithstanding all this, the literary men of Hayti have shown, especially in the drama, the germs of a remarkable literary faculty. (D'Alaux.)

In his "*Nouveau Voyage aux Iles d'Amérique*," Father Labat, after having spoken of the beautiful figure and of the vigour of the mulattoes, and after saying that they are "adroit, industrious, courageous, and hardy beyond imagination," speaks of their high-spiritedness. This trait in their character, which is marked almost everywhere, astonishes M. Perier. But, had the question related to an unmixed race, he would not have so readily expressed his surprise.

The same traveller adds, that they are fickle and devoted to pleasures. But can we not see here an instance of hereditary transmission from the father's side? Finally, he accuses them of being skulkers and vicious. But what else could the mulatto be, placed, as he is, between the blacks, on the one hand, who thoroughly hate him, and the whites, on the other, who, after having given him hope, and transmitted to him sometimes even their noblest aspirations, grind him down with crushing contempt?

Again, is it not just to ascribe at least a part of these bad qualities to their social condition, and ought we to make the mere crossing of the races responsible for the results inevitably entailed by the local circumstances of birth? The answer to this question is found in Brazil. There the prejudices of colour, far less violent than in other places, have not prevented the mulatto from taking his merited place in society. The old laws, fallen into disuse before the customs of the people, do not arrest him at the threshold of a liberal career, and there is no one who cannot recall instances wherein this result has been reached. Some have reached the very highest places in the administration of government. In addition to the proofs which I have cited elsewhere and to those which are accepted by M. Perier himself, I am able to add confirmatory oral evidence recently received by me.

M. Lagos, among others, has confirmed all that M. de Lisboa had already said relative to the superiority manifested in art by the mulattoes over the two parent races. Almost all the Brazilian painters and musicians belong to this mixed race. Their scientific aptitude also is equally well developed. A large number devote themselves to the study of medicine, (Lagos,) and very many have become celebrated as practitioners.

Observations to the same purport have been received from many other sources. M. Torrès Caicédo, former *chargé d'Affaires* of Vene-

zuela, writes me: "We find the same virtues and the same vices among the whites, the mulattoes, and the Indians." Then he adds a list of mulattoes distinguished by various titles, and among them figure orators, publicists, poets, and a former vice-president of New Grenada, "a distinguished writer and excellent administrator."

In a word, then, and to judge from all that we know of them, we can say of the mulattoes of Brazil and of many other countries besides, what M. Thevenot says of those with whom he was associated, "The mulatto may be all that the white man is. His intelligence is equal to ours." Let us add that he is born thoroughly acclimated to the intertropical regions, and let us bear in mind that a magnificent future awaits this too long down-trodden son of the negro and the white in countries that perchance are the most privileged on the globe.

The Origin of the Present Europeans.—If the crossing of races were in itself a cause of degeneration, as M. de Gobineau thinks, it is difficult to say to what a degree of inferiority European nations would have reached. There are but few places on the globe where nations have been so often intermingled, blended, and juxtaposed as on our soil. Archæology, philology, history, comparative mythology, etc., all strive daily to determine with more precision these ethnical elements, and at various times questions of this nature have been raised in the Anthropological Society. The origin and determination of the limits of the Celtic race have been especially the subject of numerous and profound studies. MM. Broca, Bonté, Lagneau, and Pruner-Bey, have on several occasions summed up the facts already known, and presenting them under their different aspects, have brought out the results of their own special researches. The works of M. Van der Hoeven, on the Fins and Magyars, have furnished M. Pruner-Bey an opportunity of making known his own upon the same subject. MM. Broca and L. Leguay have explored our own soil, and studied from an anatomical and archæological point of view the contents of the ancient tombs, etc. But I cannot enter into detail of these labours, the full appreciation of which would demand frequently a knowledge that I am deficient in, and which, moreover, touches upon special anthropology. I content myself then by merely indicating the general results arrived at.

M. d'Omalus has considered the question of European origins, taken in its totality and also in its numerous ramifications, in one of those short and ingenious epitomes in which our illustrious confrère knows so well how to sum up his learning, which is so vast, and his doubts, which occasionally border upon scepticism. Planting himself upon the broad ground of history and philology, and starting

from the recent discoveries in palæontology, he asks whether in the beginning of the present order of events the human races were not distributed almost as they are in our day ; whether the Europeans were really of Asiatic origin ; whether the languages with flexions would not have spread sooner from Europe into Asia, than from Asia into Europe ; whether the Irish, Welsh, low-Bretons, and Scotch, in place of being derived from Asia, were not more likely descendants of the autochthones of western Europe ?

M. d'Omalius has thus revived the argument originally enunciated in France by M. Henrici, and subsequently in England by Latham. These two authors go even to a greater extreme than our learned colleague. The first, admitting, with M. d'Omalius, that events have always followed in the same order, asserts that the west has always overrun the east. Consequently he is led to regard the Sanscrit language as derived from the Celtic ; he does not hesitate to look upon all the languages styled *neolatines* as offshoots of the Celto-Ligurian or Gallic tongue, a simple dialect of the old Celtic, which is preserved even to our day under the name of the Provençal dialect ; he considers the Latin itself to be directly derived from this mother tongue, which, moreover, had no small influence upon the Greek. It follows, then, that both peoples and languages have migrated from the west toward the east. Latham recognises the fact that history is silent upon the original migrations ; but, resorting to the *à priori* method, he thinks that they ought to have taken place from the larger to the more circumscribed countries, and he concludes that the original seat of the Sanscrit ought to be in the east or southeast of those countries where the Lithuanian is spoken, and that its origin is European.

The opposite opinion, as is well known, is the one maintained by the generality of modern ethnographers. In the Paris Anthropological Society, this view of the question has found many and earnest supporters. And if M. Dally has brought up again the doubts expressed by M. d'Omalius, M. Chavée, on the part of philology ; Lagneau and Bonté of history ; Bertrand of archæology ; Liétard of history, philology, and mythology ; and Pruner-Bey, in almost every point of view, have corroborated by new proofs the generally accepted opinions.

When we look at the imposing array of proofs, drawn from all these so different sources, and all pointing to one and the same conclusion, we can no longer doubt, it seems to me, the reality of this great fact, namely, that the modern European nations are children of Asia, and sisters of the races which have peopled India and Persia. An elder sister of all these races—an evidence of the primitive Aryans—still exists in the higher mountains of Bolor and Hindookoh.

Under the name of *Mamoges*, they still maintain against the fanaticism of the Afghans, their independence, their ancient customs, and their religion, almost Vedic in its character. These people have, undoubtedly, to a much greater extent than the Greeks under Alexander, impressed upon their neighbours of Cachemire those habits of regularity which characterise them, and which it is said are even more refined than among the nations which we are accustomed to look upon as models in this respect, (H. Smith.) All the recent observations of M. Lejean only tend to strengthen these conclusions, which in my opinion could justly be drawn from the facts previously known.

But, did the Aryans on arriving in Europe find the country unoccupied? No, we can confidently, at this day, assert. The man who in France was coeval with the long-haired elephant, the rhinoceros, the great bear of the caverns, and the reindeer; this man preceded the Aryan race upon our soil. He, in all probability, occupied the whole land, which later was invaded by the races relatively of recent origin. Mythological, legendary, and historical evidences, prove this in certain countries, and we have seen that we still find the evidences of this first European race. It has left its trace even in the people of Paris. In Greece, the head of Socrates, the features of which everybody knows, his cranium, certainly, well nigh brachycephalic, is known not to belong to the type which the Greeks derived from Asia. Moreover, how could these people have devised the type of the young faun, which is as wholly idealised in its kind as that of Apollo in his, unless they had before their eyes the models to indicate it?

Two great sources, therefore, have furnished the origin of the European people. But has the first of the two furnished only the homogeneous elements? Were all the men that the Aryans found in Europe entirely alike? Especially were they all brachycephalic, or wholly or more largely mesatocephalic, as are the fossil remains of the men from whom we judge of the rest? Did these last mentioned remain unmixed with the other races? Have they always peacefully occupied the soil on which they have succeeded (at most) to the *tertiary* man, whose existence is still a matter of doubt? Did any invasion reckoning from this actual geological epoch (*i. e.*, the *tertiary*), bring among us new ethnical elements before the first Aryano-Celtic immigration? Was this last preceded everywhere by the allophyllic population? Such are the questions as they present themselves at this time; for each step forward in the path on which we are advancing with such unhoped-for rapidity, gives rise to new problems, resulting from those we have already solved.

Let us remark at once that the preceding questions are wholly distinct from that which we have already examined, namely, (*the primitive European origins*). I previously defined the exact limits, both as to time and space, within which I should confine my remarks. Outside these limits the field for research is entirely free, and already a certain number of results seem to me to be acquired. Thus, for instance, M. Bernard has shown that beyond the primitive race which contented itself with the stone weapons so roughly prepared, the race which built the dolmens formed a little society apart by themselves, clearly circumscribed and wholly distinct from the Aryan stock. He has prepared a table of the migrations of this people which made its appearance at Courland, in the northern part of Russia, (West,) took up its line of march toward the west, and reached the sea, re-ascended as far as Gothebourg, but not much higher, touched at the Orcades and Hebrides, stopped upon the western shores of Great Britain and of France, where it ascended a number of the rivers, remained for a little time in Portugal, and finally lost itself in Africa, in the neighbourhood of Algiers and Constantina. At the period of its setting out, this race was still in the age of stone. In its long travels it passed through the age of bronze, and even entered upon the age of iron.

The crania of this race, even in Sweden, show at least in some of the burial places, that they were almost exclusively dolichocephalic, (Van Duben.) Is this already the Aryan race, but still in its infancy and appearing before it had made the discovery of the metals? A comparative and minute examination of the crania would alone settle this question; but, meanwhile, the considerations to be derived from their stature, would ill accord with the affirmative view of this question. When the Celt and the Aryan of the bronze age arrived in Europe, he is at once distinguished by his tall stature. The same observations apply to the short statured dolichocephalic, found in the long barrows (Thurnam). If this race was an Aryan it was a short statured Aryan, and consequently a race secondary to and different from the Celtic.

Could an allophyllic stock, then, have its dolichocephalic branches? It would not be strange if such were the fact. In this, perhaps, we may find a solution of the difficulties raised by the cranium found at Engis, and also that of Egisheim, which also appears to be of the long type, (dolichocephalic.) In this way, perhaps, we shall find reconciled the contrary opinions maintained by MM. Broca and Pruner-Bey. Do not forget that the two cranial types are found in the Aryan stock, and this in a people which, separated by this characteristic, are in accord, in other respects, relating to their

skin, hair, and language. (The Germans of the north were *dolichocephalic*, and the Germans of the middle states *brachycephalic*.) We cite again, the fact, that the negro stock, which is generally dolichocephalic, has branches that are brachycephalic (Mincopies).

The existence in Europe of an allophylic dolichocephalic people, would nevertheless add only another type secondary to those which this ancient race already presents. Let us, if you please, leave out of view its fossil representatives, still, perhaps, too few in number to generalise from, and let us take into account only the proofs still existing; let us lay aside the Magyars, whose advent is entirely modern; let us also neglect the Basque-type with the elongated head, for as a rule in this people brachycephaly does not everywhere appear to reach anything near the degree which it presents in the Laplander. This last, in turn, differs from the Esthonian in many characteristics, but notably in those pertaining to the superior maxillary bones; and finally among the Esthonians themselves we establish the existence of two well marked types.

We conclude, therefore, that without leaving this part of Western Europe, which alone has been pretty much explored from the point of view relating to our subject, we have ascertained in the allophylic race derivative branches almost as numerous as those of the Aryan stock.

It is from the mixture of these elements, so diverse, in a physical point of view, and doubtless no less different in other respects, that the existing European peoples, as a whole, have originated, for we can scarcely take into account the small admixture of Semitic blood which they have received, particularly in the south. Mixed up by wars, invasions, and movements of every sort of which it is not my business to speak, these people have almost all retained, to a very high degree, the stamp of mixed races. The prevailing element, in one or another region, shows itself quite frequently by some characteristic common to the majority of the individuals of the race, *e. g.*, stature; occasionally some trait breaks out in the midst of others which seems to exclude it, (prognathism,) at times also the pure types seem to reappear, thanks to the phenomena of atavism, but the general fact of old and repeated intermixtures is no less evident.

Are we for that reason inferior to our ancestors, and must our civilisation yield to its predecessors? Yes, replies M. de Gobineau. No, we unhesitatingly affirm. Unquestionably mere size, without a well defined purpose in view, has for us few attractions, and we should not erect a pyramid simply to enclose a coffin. But, do we shrink back when a faith-inspiring thought or a noble purpose to be accomplished comes in to prompt our efforts? The existing state of

things shows the contrary. The spire of the cathedral of Strasbourg is but slightly overtopped by the pyramid of Cheops ; in cutting through the isthmus of Suez we are doing over the work of the Pharaohs, only on a much larger scale ; and in piercing the Alps we are certainly far ahead of everything antiquity dared dream of. Likewise in the domain of arts are we very much below the Greeks, the acknowledged models of all ? Perhaps so ; but if they have remained our masters in architecture and sculpture, may we not be theirs in music and painting ? And what civilisation of the past has approached at all near our works of pure science, those marvels which, happily, accomplish every day the satisfying of our noblest and most disinterested instincts, and which also minister to our wants, our pleasures, or our caprices ?

History shows us that it is not given to man to attain at once to all the extremes of his capability. But in submitting to this law, thus far absolute, the modern European, *the hybrid a thousand times crossed from the Allophyllic and the Aryan races*, can, without boasting, regard as well done the part which he has taken in the successive work of generations ; he has a right, indeed, to be proud of the manner in which he has performed his task.

Mean Age of Races and Peoples.—In view of the movement which is bringing face to face the most widely separated peoples, and which, everyday, is multiplying the means of intercourse, by canals, railroads, and steamboats, it is impossible for us not to foresee that the time is relatively near at hand when the most distant races, after having everywhere become thoroughly intermixed, shall people the entire world with their hybrid progeny. What, then, will be the result to humanity ? Will it be degraded or elevated ?

To give an intelligent opinion on this question, which forces itself upon us, the mind instinctively turns to those countries where the crossing is already most complete. It studies with anxiety the immediate results, and the impression which is forced upon us is not, it must be confessed, the most encouraging. And from thence come those gloomy forebodings which MM. Gobineau, Perier, and others, have more or less prominently put forth.

But these disheartening prophesies are based upon the postulate, either implied or expressly reduced to a formula, (as in the case of M. Gobineau,) that these mixed races of the future will be incapable of progress. Now, do we find in the past a single fact authorising this hypothesis ? Let us recall here our own history, and what France was after the invasion of the barbarians, at which time began those admixtures of races from which the French nation took their origin : let us remember the time of the *trêve de Dieu* and the *quarantaine du*

Boi. Who could anticipate the France of to-day in that desolate country?

Why should the destiny of Mexico and of South America be any way different?

In fact, the majority, at least of civilised peoples, have had their origin only in the midst of mixed races, and M. de Gobineau himself acknowledges it. In fact, each truly new mixture has given birth to a civilisation superior, at least in certain respects, to those which preceded it and from which it took its initiative. In fact, the pure races which we saw come into Europe, arrived there wholly in a state of barbarism, and it was only subsequent to the crossings that the aptitude for development in civilisation appeared. In fact, their immediate heirs, those knights of noble blood who, completely armed, were accustomed to leap on their horses, barbed, like themselves, in iron, had actually no position in society, either morally or intellectually; and consequently, the crossing of the human races appears everywhere to be a cause of progress, producing new forms which mankind invests with the attributes of greatness.

But, evidently, no single crossing is adequate for the accomplishment of this progress, or for the appearance of this new form. Neither the one nor the other is manifest at the outset. For the benefit of those impatient ones who would reduce every thing to a moment of time, I would recall the proofs from the practice of our stock breeders; the experiments so precisely instituted by Girou de Buzareingues, or those recounted by Nott himself. A certain number of generations, a certain proportion of the mixture of the two bloods are necessary for the resultant race to give forth all that is expected of it.

In these experiments with animals, intelligence and artificial selection come in and hasten the final result. In the crossings between human races natural selection alone is in play. Is it surprising, then, that the experiment should require more time? And when the newly incoming swarms of people keep the population constantly in the condition of beginning, is it strange that the result is delayed even still longer? No, it could not be otherwise. Now in almost every case this is precisely what obtains.

But when a small number of individuals of different races find themselves isolated in such a way that the progress of events takes place without interference, and the results of the mixture become evident so much sooner, and when at the same time the phenomena are less complex; we then more readily discern the connection of events. Just these conditions have been realised at Pitcairn, and that is why I attach so great an importance to the example there found.

It is to the general history of the mixture of the human races, what our experiments in the workshop and laboratory are to the great natural phenomena. It affords us an explanation and understanding of its laws.

In 1789, nine sailors of the English ship "Bounty," having mutinied and deserted their commander, established themselves at Pitcairn, with six Tahitians, whom they purposed to make their slaves, and fifteen women, who could hardly be called their wives. So far as concerns antecedents, it was, as we see, conquest with all its abuses; it was what still too often takes place.

The results were just what they should have been. A war of races broke out. Five whites perished; the women assassinated the Polynesians. In 1793, there remained at Pitcairn, only four whites, ten Polynesian women, and some children. They lived there in a state of absolute polygamy. Subsequently a quarrel broke out between the four Europeans, and two were slain.

The two remaining Europeans finally profited by the lessons of the past. They lived in peace, and exerted all their efforts to govern the little society born in the midst of the outbreak of all their passions. One of the two soon died of disease, and Adams alone remained to continue the work, having no other guide than a Bible, which had by chance been carried there.

In 1825, when Captain Beechey visited Pitcairn, he found a population of sixty-six persons, remarkable for their beautiful proportions, their muscular power, and extraordinary agility, their keen and quick intelligence; their earnest desire for instruction, and their moral qualities, of which he narrates a touching instance. Most unquestionably, this society, entirely a mixed race, was superior at least to the very great majority of the elements which had given birth to it. But it reached that point only by passing through its *mean age*.

At Pitcairn, this decisive period has been short. The duration is in proportion to the number of elements which must be eliminated or softened down. In France and Europe it has lasted much longer, because these elements were infinitely more numerous and complex, and because in many respects the work had necessarily to be many times repeated. In America, the period of the invasion of races is still going on. How, then, should these races be fixed, and how could they manifest their true characteristics?

America, in general, and especially the Spanish and Portuguese settlements therein, are in their full mean age. This fact, evident enough to me, explains why the reproaches made against these people are so well founded. The differences which are seen in other respects between the south and the north, could be easily explained, if this

were the place to engage in that work. What sort of a civilisation will arise out of this immense field of experiment, where all the nations of the earth are mixed, and amalgamated together? It seems presumptuous to attempt even in the most general way, to reply to this question, and yet the past warrants us in casting a glance at the future.

On this point I am happy to agree exactly with M. Maury, when, taking into view the ethnical origin of peoples, he sees civilisation born and developed into greatness by the contact, mixture, and union of races. I am happy to think, as does my colleague and predecessor, M. Serres, who sums up his opinion in these words: "The greater the number of elements entering into the composition of a race the higher its development; . . . the greater the number of special characteristics the longer is its life." These great social facts will nowhere be brought out in so perfect a manner as in America. Wholly differing, then, from those savants whose views I have previously combated, I see in the concourse which all the peoples of the globe are bringing in to the formation of the future American races, a pledge that these races will be more perfect than any of their ancestors. In that fact, there will be on the whole a prime cause of superiority; and as in the past, it will without doubt be manifested in new forms by the very fact of the mixture or crossing.

Moreover, we learn from history that civilisation in the progress of descent from their predecessors never retrogrades in this respect; that while they are perchance weaker on some points they more than make up for it on others. Even the most fleeting civilisations, like those of the Arabs in Spain, have had, so to speak, their specialty, and have made progress forwards. Now no one civilisation will have had for its point of departure a foundation so large as the future American civilisation. Everything, then, tends to the presumption that it will far outstrip us.

Conclusion.—In the course of the lectures delivered at the Museum some twenty years since, and of which a resumé has been published by M. Esquiros, M. Serres insists upon the future result of the crossing of the human races. Firmly admitting the perpetuity of actual characteristic types, he believes in the unification of races. Without going to so great a length, M. Maury thinks that everything tends towards uniformity, and that the time will come when a mere variation in character will take the place of the old diversity of races.

Now, while freely acknowledging there is some truth in the opinions of my eminent colleagues, I cannot go to so great a length as they. Without doubt, in the great movement which has engaged the attentive study of all three of us, the civilised white man plays the most

important part. It is he who everywhere seeks out the inferior races, at one time by force carrying them away with him and compelling them to undertake forced migrations, at another obtruding himself upon them and occupying their own soil, at still another exercising an influence and attraction against which he strives in vain to defend himself, but always mingling his own blood with that of the inferior races, and thereby elevating their position. But the mixed races will differ in proportion as the ethnical elements to which he allies himself differ. One only of the parties will be elevated out of the distance which before separated them, and a common element will be established between them in relations where none previously existed.

In addition to this prime cause, which will tend by itself to maintain a distinction of races, even were they placed in identical circumstances, we must besides add the influence of other causes. So long as the earth remains what it is, so long as there shall be an equator and poles, isles and continents, an old and a new world, so long as the conditions of existence shall remain as varied as we now see, so long will distinct races exist, and continue to form themselves, and that, too, exclusive of the phenomena of crossing. Only, and here is the point, it is principally the white race which emigrates and populates anew other countries. Consequently these races will be more nearly allied than those that we found occupying their places; for these last were the result of a series of operations, continuing for centuries, and which will never again be repeated.

The civilised white man will not be unmindful of the paths which he has opened up to himself. Were he obliged to remain where he is for lack of means of transportation, he would still pursue his course, he would none the less continue to extend his migrations. These relations between populations established under the most varied means, would of necessity bring about marriages. His aptitude for acclimation would be enlarged. The phenomena which now obtain almost alone in the case of the Jewish race, would become universal. The races of the future will receive at birth an aptitude for sustaining the operation of the most varied influences; they will become in advance, as it were, either wholly or partially acclimated.

Thus, by virtue of events so linked together and of a self-imposed necessity, the future human races will be largely renovated with an infusion of white blood, that is to say, with the ethnological elements which thus far have carried to its highest degree the development of human intelligence. Consequently these races will become more intimately related to each other, but they will not for all that be either alike or equal. The same causes which have been at work in producing diversities among the members of the great human family,

will none the less continue to be active. There will always be dissimilar races, there will always be races superior and races inferior. But on the whole, humanity will be advanced, its means of control over natural phenomena will be enlarged; at the same time its power of resistance to those events which thus far have sometimes controlled it, will be increased. Nothing, then, warrants us in thinking that the civilisations of the future can in any way be inferior to those of the present day, but on the contrary we even go so far as to predict that in some direction yet unknown, they will far outstrip them.

THE NEGRO AS A SOLDIER.*

By SANFORD B. HUNT, M.D., late Surgeon U. S. Volunteers.

ETHNOGRAPHICAL causes have always been active in the production of wars, and the existence of slavery was undoubtedly the ultimate cause in the war of the Rebellion. Yet, though it involved the deepest problems of race, it was not in itself a war of races. It was a struggle between two geographical sections of the same race and nation as to the just status of a foreign element which had become domiciled among us by the act of our ancestors and which, in itself powerless, had by mere bulk and magnitude acquired a controlling importance in national affairs. During this struggle the negro remained passive. His ideas of the struggle were not revolutionary, but religious. He believed and waited, his simple mind filled with the grand metaphors of Holy Writ, and his doubts all silenced by an implicit faith that in the Lord's good time his deliverance would come. When it was decided by Government to employ him as a soldier, he cheerfully enlisted as he found opportunity. But when, by accident of locality, he was unable to reach our lines, he remained a faithful and quiet slave. In no instance did he assume leadership, in no instance did he organise to strike a blow for his own liberty. Yet, in all instances, he was patiently loyal to his own race and to the cause of the Union.

This passivity is a moral element which might well create many doubts as to his efficiency as a soldier. Aside from the intemperate

* We are indebted to Dr. W. A. Hammond, late Surgeon-General U. S. Army, for a copy of this valuable report to the U. S. Sanitary Commission.

opposition of negro-haters, many of his calmer friends could only look upon the experiment as one involving serious risks of failure. Had he the physique to endure hardship? Could he acquire the manual of arms and perfect himself in tactics? Had he the necessary physical courage? Would he not, when his savage blood was up in the fever-heat of battle, entail disgrace upon our cause by acts of outrage? Was not the profession of the soldier in its essence too noble and manly for this pariah of the land? All thinking minds acknowledged these doubts, and with many they became at once convictions.

The scepticisms entertained as to the capacity of the negro for the duties of a soldier found voice even in the Acts of Congress authorising his enrolment. The first Act only impliedly makes him a soldier. In the Act of Congress approved July 17th, 1862, we find the following:—

“SEC. II.—*And be it further enacted*: That the President of the United States be authorised to employ as many persons of African descent as he may deem necessary and proper for the suppression of the Rebellion, and, for this purpose, he may *organise and use them in such manner*, as he may judge best for the public welfare.”

A little later another Act was passed exhibiting the same spirit of hesitancy. We quote:—

“SEC. XII.—*And be it further enacted*: That the President be and he is hereby authorised to receive into the service of the United States, for the purpose of constructing intrenchments, or performing camp service or any other labour, *or any military or naval service for which they may be found competent*, persons of African descent, and such persons may be enrolled and organised under such regulations not inconsistent with the Constitution and Laws, as the President may prescribe.”

Even here, the name of soldier is not employed, and the precedence given to his employment as a labourer expressively indicates the hesitation felt by Congress and the people. And with a just sense that in thus employing the negro they opened the way to questions of deepest moment that might lie beyond and incurred obligations which would change the political status of four millions of human beings, they enacted another section conferring freedom on the negro, his wife, his mother and his children, who should serve in our armies, provided always that the master or owner of the negro should have enlisted in the service of, or in some way have aided and abetted the cause of the Rebellion.

Men looked at this startling innovation with different eyes. The earnest believer in a common humanity rejoiced; the careful statesman hesitated; the prejudiced denounced; and the pure scientist

looked upon it as a grand experiment on a scale of such magnitude as to render its results decisive. Every step, therefore, of the enlistment of 180,000 negroes was watched, by friend and foe, with a lively interest.

Enlistments of negroes, however, had begun before the passage of the Act of July 17th, 1862. The first black troops raised, were recruited in Kansas—the Waterloo of slavery,—by Col. James Williams, and his regiment for a long time was known as the “First Kansas Coloured Volunteers,” or, more familiarly, as the “First Nigger.” Colonel Williams acted without sanction and, of course, under difficulties that would have crushed a man less indomitable. How he fed or clothed his men is one of the unsolved mysteries. How he disciplined them is known. In one case, three members of one company, intoxicated by their new position, committed an infamous outrage. Twenty-four hours later, they had been tried, convicted and shot, the firing detail being made from their comrades. The subsequent history of this regiment is one of active service, of hard fighting and of heroic courage.

The first grand movement in the enlistment of negroes, was in the organisation of the *Corps d'Afrique* at New Orleans, and immediately after that coloured organisation became general in all the Slave States occupied by our forces. Some regiments were also raised at the North, the 54th Massachusetts being a notable example. We believe that, with the exception of that regiment, all the negro troops were taken up as United States volunteers, including the two regiments raised in Kansas and known, up to the spring of 1865, as the First and Second Kansas Coloured Infantry. But very many coloured troops were credited to the quotas of Northern States. Counties and cities sent recruiting agents to the South, and by paying bounties, induced negroes to credit themselves to New York, Boston or Philadelphia, as the case might be.

It was at first proposed to confine the use of these troops to the holding of sea coast and other fortifications, especially in malarial districts, with the idea that they were not liable to the diseases peculiar to those localities. As our experience enlarged, they were employed in campaigns, battles, and sieges, and were in many cases assigned to tasks requiring all the steadiness of veterans.

The conclusions which we are now justified in forming as to the value of the negro as a soldier affect his physique, his capacity to learn tactics, his providence or improvidence in the care and cooking of his food, his powers of resistance to hunger and fatigue, the diseases peculiar to him, if any, and those to which he is most usually subject, his morale, including his courage, cheerfulness, and obedience, and finally his comparative intellectuality.

Aptitude for Drill. The well known imitative faculty of the negro, together with his natural fondness for rhythmical movement, are elements of character which were promptly improved by the drill-officers by whom the recruits were instructed. The habit of obedience, inculcated by the daily life of the slave was also valuable, and it was soon found that, in the drill of the soldier, the negro lacked no essential. In cleanliness, however, there was a deficiency, though that was overcome in those instances where the discipline was rigid. Some of the regiments of the *Corps d'Afrique*, organised at New Orleans, were models of soldierly neatness and precision; while others, less carefully officered, were slovenly and careless.

Capacity for Marching. The large, flat, inelastic foot of the negro—almost splay-footed—was at first considered an objection; but experience has not sustained the idea. I have known a command of about 1,500 negroes to march 78 miles in 76 hours—part of the distance over a rough mountainous road—with remarkable ease and without increasing the sick-list, except from blistered feet. The general experience of army officers has decided that the negro marches as well as the majority of troops. His large joints and projecting apophyses of bone give a strong leverage to the muscles attached to or inserted in them. Yet in unfavourable circumstances there is reason to suppose that he fails to endure prolonged fatigue as well as the white man.

Endurance of Fatigue and Hunger. In response to inquiries addressed by the New Orleans Agency of the Sanitary Commission, Surgeon Blackwell, 81st U.S.C.T., expresses the opinion that the negro bears fatigue better than the white man. Other officers, among them Surgeon Humphreys of the 55th U.S.C.T. and Surgeon F. E. Piquette, in charge of the U.S.A. General Hospital for Coloured Troops at New Orleans, state with equal positiveness, that he is inferior in endurance; that "he is *at present*, too animal to have moral courage or endurance." After full discussion with all the leading surgeons in charge of negro troops in Louisiana and Alabama, Dr. Owen M. Long reports to the commission that, "the coloured soldier does not endure fatigue as well and as long as the white, but he can endure hunger for a much longer period." Dr. Long, in speaking of cases of exposure and hardships, says:—"In this instance, the *morale* of the white man steps in and often aids him in overcoming the situation."

Such I believe to be the general opinion of observers. The negro loses the impulse of his natural gaiety, and becomes bitter and despondent; though, if well-fed, as in the instance of the severe march mentioned above, he sustains himself well.

Powers of Digestion and Assimilation. The negro is a heavy feeder. His plantation ration was usually confined to bacon and corn meal, eked out by such vegetables and poultry as he was allowed to raise, or such game as could be found in stream or forest. In the army he speedily adapted himself to the ration, was uniformly fond of "hard tack" and preferred bacon to beef. Even in the climate of the Lower Mississippi the tropical origin of the negro shows itself in some difficulty in maintaining animal heat. Hence, probably, their instinctive fondness for fat bacon, opossum, and coon. All our reports concur, practically, in the opinion that the negro, under a fair ration, has good digestive powers and manifests no peculiar tendency to diseases of the alimentary tract.

Without being especially provident in the care of his ration, he is a very fair forager, and has a long list of foods not relished by the white soldier. He is also a liberal patron of the sutler. Negro regiments, in my experience, usually consumed all their ration, and as much more as they could conveniently obtain.

Immunity from, or Liability to, certain Diseases. One of the strongest arguments used in favour of the employment of negro troops was their supposed immunity from malarial forms of disease. There was a wide-spread belief in this idea, which has not been sustained by experience. We cannot better express our own convictions, resting on a very considerable observation, than by quoting somewhat at length from reports made to the commission by Dr. Ira Russell, who has given this subject the most careful study at St. Louis, at New Orleans, and in Virginia. Dr. Russell says, in a report on the coloured hospitals of Richmond, Norfolk, etc., that he found the opinion of numerous surgeons whom he consulted to be as follows:—

"First. The negro bears injuries and recovers from wounds quite as well as the white man."

"Second. Gangrene is of rare occurrence."

"Third. Malarial, typhoid, and bilious fevers do not occur more frequently or terminate more fatally than among the white race."

"Fourth. Pneumonia, pleuro-pneumonia, and measles are more frequent and fatal than among the white race."

Two of the surgeons, Drs. Maillard and Ela, have had a good deal of experience among the coloured population in the contraband hospitals at Portsmouth, Norfolk, and on the adjacent plantations. In reply to the query, "To what diseases is the negro more subject than the white man?" they replied, without hesitation, "To pneumonia and pulmonary inflammations." * * * * * "The system of slavery was calculated, in various ways, to stimulate child-bearing. The mother had no responsibility—no care for the support

of herself or her children. Breeding enhanced her value—to be a *cheap* negro was a disgrace. But, while the slave-holder understood how to stimulate child-bearing, his method of rearing children was very bad. The importance of cleanliness, good food, warm clothing, and proper shelter was but indifferently understood; hence, many of these children grew up with impaired constitution, affected with scrofula and tuberculosis. Dr. Seymour thinks that eruptive diseases, such as small pox, measles, and scarlatina, are severe with coloured children, and many die from pulmonary complications."

There is, or was, among inexperienced medical officers, a belief that negroes are not fully amenable to remedies. Sudden and accountable deaths frequently occurred in the hospitals, and came to be considered a negro peculiarity. In some cases the superstition of "fetichism" was responsible for this. The patient would believe himself possessed with a devil, or to have been subjected to the baleful influence of the unholy charms of some witch; he thus became hopeless, despondent, and apathetic. Upon these points we again quote from Dr. Russell:—

"I have given careful attention to the symptoms and pathology of disease as exhibited in the negro, and as modified by his peculiarities of constitution, habits and modes of life. I have also made careful inquiries of surgeons on duty in negro regiments and in the negro hospitals at St. Louis, Mo., Nashville, Tenn., Washington, D. C., Alexandria, Richmond, and Hampton, Va."

"All the intelligent surgeons agree with me that a thorough knowledge of the habits and idiosyncrasies of the negro are of the utmost importance in order to understand and successfully treat his diseases. Much of the lack of success in treating disease among this unfortunate class of our population is undoubtedly due to ignorance of such facts. Two hundred years of servitude, the implicit obedience required, the exemption from all care and anxiety to provide for the future, the extinguishment of all hope of improvement in his civil or social relations, has produced marked physical and moral effects. Self-reliance and exercise of the will have never been cultivated or formed any part of his education. His highest ideal of enjoyment has consisted in freedom from toil and the gratification of the lower animal instincts."

After alluding to various other and obvious hygienic causes affecting the negro, Dr. Russell says:—

"When sick, he will take neither food nor medicine, unless administered by some other person. Many sick negroes have died in consequence of this neglect, much to the astonishment of the physician, who had faithfully prescribed all that was needed of both. He is superstitious, and believes in charms and diabolical agencies, and often imagines that he is the victim of some supernatural influence, from which it is impossible to extricate himself. When under the

influence of this hallucination, he becomes indifferent, despondent, and gives up in utter despair, dying without apparent cause, leaving the impression on the physician's mind of lack of vital power, when, if the case had been thoroughly understood, the explanation would have been found in the mysterious influences of the mind working upon the body. But little reliance can be placed on the subjective symptoms as given by the negro. His ignorance of terms, and his obscure and indefinite mode of describing sensations only serve to confuse and perplex. Trivial symptoms are greatly magnified, while grave ones are entirely overlooked. The intensity of physical suffering is his measure of danger. The intelligent physician soon learns that he must treat a negro as he would a child. At a glance, he knows that the pale ashen colour of the skin indicates disease, while the sleek, glossy hue is the sure sign of health. He gives but little attention to the symptoms described by the patient, but resorts at once to the physical signs. When such precautions are taken and careful investigation made, but little difficulty will be experienced in properly diagnosing the diseases of the negro."

It will be seen, we think, that the conditions of the negro thus discussed, which certainly impair his efficiency or his durability as a soldier, are not intrinsic to his race, but are to a great extent educational, and may be expected to disappear under the energising influences of freedom and the teacher. Fortunately, even this expectation has already been tested and proved to be correct by comparison between the free negro recruits from the North and the grossly ignorant slaves enlisted from the plantations of the South. The difference, says Dr. Russell, consists in the greater dependence of the recently enlisted enslaved upon the care of their officers and indifference to personal necessities and comforts. Surgeon-General Dale, of Massachusetts remarks:—

"The difference between the coloured volunteers recruited North and coloured regiments raised South was very great and more strongly marked than any characterising white soldiers as compared with black. The blacks born and recruited South having just emerged from the condition of servitude imposed upon them since birth are far more dependent than the coloured regiments recruited North, showing that the further this race has been removed from the depressing influences of slavery, the closer has become their approximation to the whites in their physical development and capacity for becoming enduring soldiers."

It was also observed that northern negroes when removed to the South presented the same liability to malarial disease that attended the whites. But in the opinion of the writer, this was also true of those negroes raised at the South. Dr. J. C. Nott, of Mobile, denies that they have any exemption from malarial disease. In my own experience, the ratio of malarial and typho-malarial disease was about

the same in all three classes, whites, northern negroes, and southern negroes. This corresponds also with the facts reported by African travellers, Barth, Andersen, and Reade, who speak of great mortality from intermittent and bilious fevers of the Africans in their native jungles. The conclusion reached by Forry, Nott, Blodgett, and Drake, that "there is no such thing as acclimation to malaria," finds no exception in the negro. This is the uniform testimony of all surgeons in charge of coloured troops who have reported to this Commission.

The weight of evidence seems to place them upon the same level as the white, in regard to liability to malarial disease.

In *pulmonary diseases* we find the only excessive cause of mortality in the negro which seems to be inherent to his constitution. We have already spoken of the frequency of eruptive diseases among negroes, but this is due, evidently, to neglect of vaccination and to the protection against measles and scarlatina, afforded them by the isolated life of the plantation and the ease with which any particular focus of contagious disease could be quarantined under the social system of the South. And the fatality of these diseases among negroes is almost uniformly ascribed to their complication with pneumonic affections, intercurrent or secondary.

While it must be admitted that temporary causes had much to do with the frequency of lung diseases among negroes, it will still be found that they are vastly more liable to this source of mortality than the whites. In the process of escaping from his master to reach our lines, the slave was often exposed to great hardships, and in the transition period between his first day of freedom and his final enrolment as a soldier, these exposures were too often continued at a vast expense of life; yet it was found beyond, that when fairly enlisted, clothed and fed, and subjected to the same methods of life as the white soldier, he still exhibited a far greater ratio of death from pulmonic disease. On this point we quote *in extenso* from the valuable researches of Dr. Russell:—

"From the records of five hundred autopsies (four hundred and seventy-two of which were of coloured men) made at Benton Barracks, Mo.; Wilson Hospital, Nashville, Tenn., and L'Ouverture Hospital, Alexandria, Va., it appears that pneumonia and pleuro-pneumonia were found to exist, and were usually the cause of death, in four hundred and six out of the four hundred and seventy-two cases. Tuberculosis existed in thirty-seven cases only. All other diseases eight cases."

"In the Army of the Potomac, and in the hospitals at Alexandria and Fortress Monroe, the coloured troops suffered much less from pneumonia than in the west; and the same is also true of the white troops. Even previous to the war, the old army suffered much more

from it in the valley of the Mississippi than on the Atlantic coast. Especially was this the case at Jefferson Barracks, near St. Louis, Mo."

We are compelled, then, to believe that, independent of external causes, the negro is far more susceptible to pulmonary disease than the white. The physiological cause of this cannot, perhaps, be demonstrated; but great weight is due to the hypothesis that he has a tropical, or smaller, lung. In all, or nearly all, the autopsies we have quoted, the weights of the lungs were taken; but those weights were so much invalidated by the presence of various forms of solidification in the organ, that we are unable to use them in this connection. A careful series of weights of normal lung, to contrast with weights of an equal number of whites, is a great desideratum. It should be re-inforced by measurements and the volume and the expansibility of the living thorax. At present we are only able to suggest that, if the Arctic lung requires a capacity equal to the absorption of oxygen enough to convert into carbonic acid gas forty-five or fifty ounces of carbon daily, in order to maintain the animal heat in those cold regions, it would be in accordance with the economy of nature to suppose that the oxygen capacity of a tropical lung would be smaller than the Arctic, in the same ratio as the amount of carbon required to maintain animal heat in the sultry climates of the Equator. But this is not yet proven. The comparative frequency of tuberculosis in the two races, is by no means understood. Most surgeons in contact with the negro, are of opinion that he, especially the mulatto, is predisposed to consumption. This opinion is pretty nearly universal among them, and yet Dr. Russell, from his own studies, doubts the truth of the theory. Dr. Harris, of Cleveland, Ohio, himself a negro, and a close student of his race, is emphatic in the opinion, that the admixture of races does not impair physical endurance or fecundity, but, on the contrary, promotes both. Against these opinions rests a pretty general conviction that tuberculosis is a scourge of the negro, especially the mulatto, and that the fecundity of the latter is not equal to that of pure bloods. Common observation shows that the number of quadroons is much more numerous than that of "octo-rooms," and that the number of mulattos is much greater than that of quadroons. If there were no impediment of fecundity, the reverse would obtain. But this study lacks all the data which would ensure an exact and intelligent opinion.

Intellectual capacity. The negro, both by nature and education, is social and gregarious. His fondness for companionship is notorious and adds much to his adaptability to the crowded life of the camp. The negro encampment is always a cheerful and chatty place, en-

livened by music, dance, and sport. Nostalgia, even in the married soldier, is almost unknown, and, when he is well and well fed, I have never seen a case.

His intellectual acuteness has been very much blunted by centuries of ignorance and servitude, and it is now impossible to define his relative position—as a native and uncontaminated being—in the scale of races. His history in the land of his origin is one of continuous barbarism, with occasional wild outbursts of the brute element. On this continent, we behold a patient, long-suffering, religious man, who, under circumstances of great provocation and frequent opportunities, rarely commits those graver and more beastly crimes which disgrace human nature. His record during the war of rebellion is wonderful in its gentleness and Christian forgiveness. He has “waited patient on the Lord,” and not until the prison gates were thrown open did he attempt to come out into the light of freedom. It is with him as we find him now, and not with his barbarous ancestry, with him under the dispensation of Christ, and not under the curse of Ham—that we have to deal in this era.

It would be grossly unfair to subject the negro to a comparison of intellectual capacity based on his present manifestations of mental acuteness. In the Slave states he has been held in ignorance by law; in the free States subjected to a constant sense of inferiority. All the paths of competition have been barred against him, and, though in the North he has in occasional instances raised himself to prominence in intellectual combat, it has been over obstacles which might daunt the most enterprising.

We do not expect from the besotted peasant of feudalism any vindication of his membership in a superior race. How few are the cases in which the agricultural peasant of Russia, France, or even England, has achieved intellectual distinction! From our own feudalism, we can anticipate no different result. We must turn, then, from the illiterate—almost inchoate—intellect of the feudalised negro, undeveloped and uncomprehended as it is, to some other means of comparison. However deficient it may be, it is nearer the truth than it would be to demand energy, enterprise, and political sagacity of one who has not yet made acquaintance with the spelling-book.

Three modes of ascertaining the superiority or inferiority of races have been devised, which have reference only to physical facts, and depend for their correctness solely on the honesty and accuracy of the observer. One of these—that by external measurements of the cranium—is in itself essentially faulty, in that it makes no allowance for the thickness of the skull, though it has developed the fact that the Germans use larger hats than the Anglo-Americans of the

Northern States; these, larger hats than the same race in the Southern States; and these, again, very much larger than those worn by the Spanish-Americans of New Mexico, etc. The English infantry hat sent to the coloured West India troops was found much too large.

A second means of measuring intellectuality rests, like the former, on the size of the brain, and is based on the supposition that there is a direct ratio, between the mental and the cubic capacity of the cerebral mass. Prof. Samuel George Morton, the distinguished craniologist, has taken the internal measurements of more than six-hundred skulls, by filling them with peas or shot, through the foramen magnum, and then measuring the peas or shot by the usual method. His plan is ingenious, and only lacks an accurate knowledge of the race represented by the skull and a far greater number of observations to have a decided practical value.

The third plan is to ascertain the weight of the brain by post-mortem examinations, and is, *per se*, the more reliable.

All these measurements presuppose that the size and weight of the brain is the measure of its intellectuality—a theory probably correct in the main. The objections are these: The mental capacity of a brain probably depends upon its relative portion of grey substance; and, in two brains, of exactly equal weight and measurement, these may differ materially. Again, the distribution of the volume of a brain, whether in the anterior or posterior regions of the skull, may materially control its intellectuality. But all analogies and contrasts go to prove that, as a rule, the size of the brain has much to do with its mental power. Daniel Webster's gigantic head contained 122 cubic inches of brain; the Hottentot and the Australian have only 75 cubic inches. The Toltec Indian, now perished from the face of the earth, had 77 cubic inches; his conqueror, the barbarous North American, had 84 cubic inches.

For the sake of comparison we give, succinctly, the measurements in cubic inches as established by Morton:

	Mean. Cub. Ins.
The Teutonic family, including English, Germans, and Americans (30 crania), has	92
The Pelasgic, Celtic, Semitic, etc., have	88
The Malays, Chinese, Hindostanees, and Egyptians	83
The American Tottec Indian	77
The American barbarous Indian (161 crania)	84
The native African Negro (62 crania)	83
The American Negro (12 crania)	82
Hottentots and Australians	75

In contrasting the important races we find that the conquering Teutonic family outnumbered all the rest; that, by a singular parallelism, the conquerors (barbarous Indians) who preceded us on this

continent had seven inches the advantage over the annihilated Toltecan, and that the now perishing Indian has eight inches less of brain than his conqueror, the Teuton. And, not to be reconciled with the theory of a direct ratio between size and intellect, is the strange fact, that the Totecan, the semi-civilised Indian, who built the mounds of the West and the now buried cities of Mexico and Central America, was driven out by a conqueror who, with larger brain, has never manifested any tendencies toward civilisation.

The third method of estimating intellectuality by material conditions is, by ascertaining the weight of the brain in different races. Up to the present war the number of brains carefully weighed by anatomists was small, nor had any attempt been made to educe any difference that might be assigned to race. I have carefully collated all the records of weights accessible, and find, in all, 278 brains of white Europeans, mostly English and German, and given on the authority of Clendenning, Sims, Tiedemann and Reid. These tables give the mean weight of the white European brain at $49\frac{1}{2}$ ounces avoirdupois; the greatest weight given being 65 oz., and the smallest, 34 oz.

ETHNOGRAPHICAL TABLE,

Derived from 405 Autopsies of White and Negro Brains. Made under the direction of Surgeon Ira Russell, 11th Massachusetts Volunteers.

	Number of Autopsies.	Grade of Colour.	Average weight of brain.	Maximum weight of brain.	Minimum weight of brain.	Brains, 60 ounces and over.	Brains, 55 and under 60 ounces.	Brains, 50 and under 55 ounces.	Brains, 45 and under 50 ounces.	Brains, 40 and under 45 ounces.	Brains, 35 and under 40 ounces.	Brains less than 35 ounces.
	24	White.	oz. 52.06	oz. 64	oz. 44 $\frac{1}{2}$	1	4	11	7	1	...	...
	25	"	49.05	61	40	1	...	10	12	2	...	...
	47	"	47.07	57	37 $\frac{1}{2}$	...	2	13	19	12	1	...
	51	"	46.54	59	38 $\frac{1}{2}$	...	2	10	22	11	6	...
	95	"	46.16	57	34 $\frac{1}{2}$	...	1	15	50	21	7	1
	22	"	45.18	50 $\frac{1}{2}$	40	...	...	3	10	9	...	...
	141	Black.	46.96	56	35 $\frac{1}{2}$	...	5	42	51	38	3	...
	405	...	...	...	...	2	14	104	171	94	17	1
Autopsies of Clendenning, Sims, Reid, and Tiedemann,	278	Whites, collated from various sources,	49 $\frac{1}{2}$	65	34	7	28	99	97	39	7	1

Fortunately, in the same series of autopsies from which we have quoted in our statement as to the frequency of diseases of the lung,

we find the weight of the brain given in 405 cases, of which 24 were white and 381 were black. This number is larger than that of all the other brain-weights heretofore published, and is sufficient for satisfactory generalisation. It has, moreover, a special value in giving the grade of colour, whether black or mulatto, &c. The labour of this great number of autopsies was performed under the direction of Surgeon Ira Russell. The mode of classification has suggested itself to the writer.

The following laws would appear to obtain in the above table.

1st. The standard weight of the negro brain is over five ounces less than that of the white.

2d. *Slight* intermixtures of white blood diminish the negro brain from its normal standard; but, when the infusion of white blood amounts to one-half (mulatto), it determines a positive increase in the negro brain, which in the quadroon is only three ounces below the white standard.

3d. The percentage of exceptionally small brains is largest among negroes having but a small proportion of white blood.

The weights given in the table are much larger than those given by European anatomists, so far as the white race is concerned. Yet certain correspondences induce us to believe that such a difference actually exists and would be verified by a more extended research. In the vital statistics of this work the weight of the American soldier is found to be $5\frac{1}{3}$ pounds more than that of the French soldier, and 18 lbs more than that of the average English recruit of the age of twenty-one years. Again, there is a curious confirmation of Morton's measurements of the internal capacity in cubic inches of the human cranium. If, as he states, the standard capacity of the Teutonic cranium is 92 cubic inches, and that of the American negro 82 cubic inches, then, to prove this relationship, the white brain weighing 52 ounces, the negro brain should weigh just 46.40 ounces. It actually weighs 46.96 ounces. This is founded on the American measurements only. If we group together the whole mass of weights of whites, foreign and American, we shall have 302 brains of whites, average weight 49.7 ounces. Comparing this with the weight of 141 pure negro brains we find a difference of 2.74 ounces.

Supposing the matter of weight to be the essential condition of intellectuality, the average white has a competitive advantage over the average black of $5\frac{1}{2}$ per cent.; or, taking the 24 brains of white Americans as the standard of comparison, the competitive advantage of the white is $9\frac{1}{2}$ per cent.

Two important questions present themselves in this connection.—

1st. Morton's measurements seem to show that during two centuries

of servitude the negro brain, if it has not diminished in size, has not increased under the influences of slavery. Therefore the crucial experiment of the effect of freedom and education has only just begun. We cannot judge the ultimate capacity of the negro from that which he has thus far manifested. And 2d, so far as the 24 white brains enumerated can prove anything, they show that the American is heavier and larger than the European brain. If it has enlarged under our institutions, why may not the negro brain, subjected to new and invigorating influences, also increase its size?

The number of white brains weighed is too small for generalisation. It is simply a suggestion, not a scientific fact. To test it we must look to other conditions and inquire how far the climate and policy of the United States have affected or changed other and easily recognisable physical forms of man. The American is the child of Europe. Other things being equal, we should expect him to be a mere repetition of the European.

But there are evidences that the American, in founding a new nationality, has also established a new type of manhood. Of nearly 26,000 recruits from the New England and North Western States, Mr. Elliott informs us that the mean height was 5 feet 8½ inches. Of 27,853 recruits to the British army at home in 1860 the average height was 5 feet 6½ inches. The average height of the French army, for a series of years, was 5 feet 5¾ inches. Here, then, we find the American soldier is the tallest of the three, and so far as we can examine weights, we find him the heaviest, being 5½ pounds heavier than the French and 18 pounds heavier than the British soldier. In fine, there seems to be some reason to believe that the human brain, in the case of whites, has been increased in size by its transplantation to this continent, while in the case of blacks it has made no progress, but has, perhaps, deteriorated under the influences of slavery.

As between the two races, the problem is: Does the large brain by its own impulses create education, civilisation and refinement, or do education, civilisation and refinement create the large brain? This problem might be solved by a series of researches in the weight of brain of the poor whites of the south, known as "sand hillers," "low-down people," or "crackers." With them civilisation has retrograded. They came of a good stock originally, but have degenerated into an idle, ignorant and physically and mentally degraded people. Their general aspect would indicate small brains. If they are small it is due to the absence of educational influences.

In the present state of science, we can only refer to general opinion, which leans to the belief that it is within the power of educational causes to modify the form and size of the human brain to a consider-

able extent, and that the competitive success of the freedmen of this country rests upon the effort that may be devoted to their mental and moral elevation. They have already the same cranial capacity with the Hindostanees, who have developed a high civilisation, a profound philosophy and a rational religion.

We have thus stated, as elaborately as our limits will permit, the differences which exist between the black and white races. It will be seen that, for the purposes of the soldier, he has all the physical characteristics required, that his temperament adapts him to camp life and his morale conduces to his discipline. He is also brave and steady in action. His only disqualifications are found in his greater liability to pulmonary and exanthematous diseases and in the lack of education—perhaps of native intellect—that forbids his attainment to the rank of a commissioned officer. Neither of these objections are of sufficient moment to throw him out of the lists, and, in all subsequent wars, this country will rely largely upon its negro population as a part of its military power.

THE RACE QUESTION IN IRELAND.

By J. W. JACKSON, Esq., F.A.S.L.

THE day for the practical application of Anthropology has not yet arrived. Statesmen, although it is their business to govern men, know nothing of the science of man. And philosophers, although they profess to study human nature, prefer doing so in an abstract way, that ignores diversities of type and character as something beneath the dignity of a mind capable of a logical deduction of conclusions from the first principles of things. The result of this is, that whether in the executive or legislative department of government, we proceed on groundless assumptions and hastily formulated fallacies, which, in so far as they have any recognisable basis, seem to rest on the theological dogma of monogenism on the one hand and on the ultra-republican affirmation of racial equality on the other. As might be supposed, the effect of such grave misapprehension is often most lamentable. With an oceanic empire, that in its various settlements extends from the arctic almost to the antarctic circle, and which embraces not only European, but also Asiatic, African, and American peoples of almost every race, from the oceanic Negro to the high

caste Caucasian, and in every grade of culture, from the Indian hunter to the Oxford professor. Britain, in her regnant and imperial capacity, knows nothing of race. Practically, of course, she is compelled to recognise the difference between an Andaman islander and a Hindu Brahman, and Australian aborigine and a European settler, but she does so grudgingly, and with a reserved conviction that it is only a temporary arrangement, that, by the help of bibles and missionaries, to say nothing of omnipotent acts of parliament, will some day cease and give place to a millennial equality among all the sons of men ! This notion of racial equality was the underlying element of error in the public mind, which permitted of so monstrous a perversion of the forms of justice, as that involved in the prosecution of Governor Eyre. Were not the negroes of Jamaica "brothers," albeit in ebony, and had they not been liberated by parliamentary enactment and hard British cash, and were they not "converted" and capable of speaking English, after a fashion ? What more, then, was needed to prove that, whether as loyal subjects or armed insurgents, their treatment, to the minutest particular, should resemble that of our own or any other European people, under similar circumstances ? This was the arch-fallacy that tinged alike the platform oratory of the missionary meeting and the graver address of the Lord Chief Justice. Now, while such misconceptions are so generally prevalent, our present governmental mistakes, whether in legislation or administration, are unavoidable. The only cure for such errors, is knowledge—at least, to the extent of admitting racial diversity, mental and corporeal.

Now, although the misapprehensions to which we have been alluding are most absurd, if not most mischievous, where the diversity of type is greatest, as for example between Negroes and Caucasians, yet the error in principle is the same ; if, misled by false assumptions of racial equality, we proceed to legislate for well marked varieties of the same great division as if they were identical in endowment and proclivity, in capacity and requirement. We know that this is the tendency of modern legislation, which in this matter is lamentably in arrear of scientific knowledge. We do not blame any one for such a state of things, which is to a large extent unavoidable. We are still in the midway course of a revolutionary movement, which, beginning with theology and ecclesiastics in the fifteenth and sixteenth centuries, is now ultimating itself in the political commotion and social change of the eighteenth and nineteenth century. As a reaction against hierarchical and feudal despotism, such a movement could not fail to emphasise equality, to the extent even of ignoring racial diversity. Moreover, this movement is still headed by *doctrinaires*, men who unwisely begin with an assumption and then conscientiously end in a

fallacy. Whether from mental, constitutional, or educational impressions, these men, however otherwise gifted, seem incapable of appreciating facts when opposed to their favourite ideas. Hence, they overlook the obvious organic specialities of the different types of mankind, as of no account from their standpoint, and both speak and act as if they disbelieved in any harmonic relation between the mental constitution and organic structure of a people. They believe in art rather than nature, and fancy that by time and education they can make anything of any race. It is, of course, logically correct for such persons to put unlimited faith in institutions. Regarding laws and usages as the cause rather than the effect of national character, they, without any misgiving, attempt the transference of institutions from one race to another, however great the gulph between them—and then wonder that nature does not second their experiments.

Some of these have been instituted on rather an extensive scale during the present century. The whole of the Spanish possessions on the continent of America have been made the subject matter of their operation. Their racial equality and representative institutions have been on their trial for fully two generations, not as yet with the most satisfactory results. Knox foretold their failure thirty years ago, and nothing has since occurred to falsify his prediction; the only undeniable tendency of things thus far, being towards a re-emergence of the Indian type in strict accordance with the laws of race, as generally understood by Anthropologists. Nothing deterred, however, by this, England attempted the same thing in her West India Islands, where, as there are no aborigines, the only perceptible effect thus far, of this vast and expensive scheme of philanthropy, has been a rather effective development of negroid proclivity to indolence and barbarism; and then, as an affair almost of yesterday, we had the civil war in the States eventuating in the liberation of the negro throughout the South; with what effect, the future alone can decide; although science rather inclines to his ultimate extinction, and perhaps supercession by a superior race, like that of the Chinese Coolie, whose organic specialities also ally him more nearly to the aboriginal Indian type.

But these were experiments with very unfavourable material, where complete fusion, even if ultimately attainable, could not be rationally expected for centuries. But it is otherwise with races more nearly allied, as for example any of the so-called Aryan divisions of Europe. These have been so often commingled by the agency of conquest and colonisation, that it would be difficult to say what two of them will not amalgamate, to the extent at least of an ultimate absorption of one of the types, generally, if not always, the intrusive. Of this, the Goth in Spain, the Visigoth in Italy, and the Frank in Gaul are

illustrious instances. Britain is still debateable ground in this matter, the believers in area regarding it as essentially Celtic, and so at farthest only susceptible of a Teutonic or other baptism. But this view is so alien to popular prejudices, that it finds few supporters except among professed Anthropologists, and even among these there are still many dissentients. By those, on the contrary, who are unqualified believers in race, as something independent of area, England and the Lowlands of Scotland are regarded as thoroughly, and in a sense, permanently teutonised. And as this accords most easily with the prevalent notions about our "Anglo-Saxon" ancestors, it is, of course, the one most generally accepted. According to this popular Anthropology, however, Ireland is always spoken of as undoubtedly "Celtic," and it is so, because it did not partake with England in the benefit of the "Saxon" invasion. We suppose it need scarcely be said, that science cannot accept such "rough and ready" inferences from data so imperfectly ascertained and so gravely misapprehended. The race problem of the British Isles is scarcely susceptible of so facile a solution, which, sooth to say, demands the consideration of elements altogether ignored in this easy settlement of a rather difficult question.

We have spoken somewhat slightly of popular notions on the race question; but, we would not thereby be understood to imply that science has yet any right to assume a dogmatic tone on the subject. Anthropology is still at an incipient stage, and those who have shown the greatest mastery of its principles and the minutest acquaintance with its details, will, if we mistake not, prove the most modest in their pretensions to speak with authority on questions still under discussion, and awaiting the light of additional facts and profounder speculation for their more effective elucidation. It is thus with the great race problem of Europe. We know, that at present its peoples are predominantly Caucasian in type and Aryan in language; and there is adequate evidence that they have been thus characterised throughout the historic period. And yet, its quaternary men, to say nothing of later varieties, were ruder than any aborigines yet discovered. Now, of the process of supercession we know nothing. It was, of necessity, transacted ere written records came into existence, and we have not yet learned to spell out those bequeathed to us from other sources. We have, therefore, to be contented with the fact, rendered indisputable by recent discoveries in Archæology, that there has been a succession of races in Europe, and that its existing Aryans are but the latest link in the series, while its Esthonians in the South and its Finns and Lapps in the North, though no doubt the remnant of earlier races, do not represent the first.

Of course, Ireland participated in these changes; perhaps, however, in a manner somewhat peculiar, arising from its geographical position as the north-western extremity of Europe, and so the final recipient of its manifold immigrational invasions from the south and east. If we mistake not, there are still perceptible traces of this speciality of position and fortune in its existing population. The Iberian character of the peasantry in the south and west has been often noticed. Even an approximation to an absolutely negroid type has been occasionally detected by keen observers. Now, it may be said, is not this last a remnant of the quaternary man? And what is the first, but a remnant of the Esthonian period not yet fully absorbed by later types? Quite certain it is, that inferior and non-Aryan racial elements are clearly perceptible in the population of the sister isle, and this, too, in much greater strength than in Britain. In the latter they are rare and exceptional, and, therefore, probably due simply to atavism, while in the former they are sufficiently common to warrant the suspicion, if not to sustain the conclusion, that they have been uninterruptedly transmitted, and are, therefore, due to persistence of type on the part of an older and wider, but still not wholly extinguished, race. We allude to these facts—dim and distant as they must seem to the general reader,—not, we trust, in the spirit of Anthropological pedantry, but, because they in a measure help to explain that peculiar impulsiveness and excitability always so characteristic of the Irish, who have thus, perhaps, inherited a rather larger bequest of the passionate elements from prehistoric races than most other European peoples.

We would not, however, have the foregoing statements and suggestions misapprehended by the man of science, or misapplied by the statesman. The speciality of the Irish in their relation to rude or prehistoric types, is merely one of comparative aggravation. It has been said, that if you scratch a Russian you find a Tartar, so if you stir a Spaniard too deeply, you rouse the Moor. Something similar may, perhaps, be said of the French and English, only the savage does not here lie quite so near the surface. This is a subject demanding far more attention from Anthropologists than it has yet received. Among the ruder individualities, even of the most civilised nations, we often find types, decidedly barbarous, however produced, whether by degeneracy from a higher or persistence through a lower race. What phrenologists, perhaps rather unfairly, term "the criminal type," is an instance of this. We remember being particularly struck with the Turanian character of a group of murderers from the collection of the late Mr. Holm, when the old gentleman made us "sup full of horrors," by a stupendous lecture on the organ of de-

structiveness and its manifestations. This, however, is only a branch of the much wider subject of caste to which we have alluded in a previous article, and which must some day come up for solution at the hands of future Anthropologists.

But whatever may be the number or diversity of prehistoric racial elements still extant in Ireland, we can have no hesitation in assigning it to what is now known as the Celtic area. It is so in common with the whole of the British Isles, and its peculiarity in this relation, is the imperfection of its racial baptism. This perhaps needs some explanation. Few facts are now better established by Archaic and Historic Anthropology, than the periodic baptism of certain types by their racial correlates. The conquest and colonisation of the Celtic area by the Teutons is an instance in point. The previous conquest of the same area by the Romans is another. Now, from the latter the Irish were wholly exempt, both to their moral and physical disadvantage. And they have but imperfectly partaken of the benefits of the former. The result is, that throughout large portions, more especially of Munster and Connaught, we find the Celt in a state of racial exhaustion; while he everywhere lacks that political and municipal training, which we owe to the domination of Rome, and that social organisation which we have derived from Feudalism. This was doubly unfortunate, for these necessary processes not having been effected at what may be called the right time, and by appropriate instrumentalities, have to be accomplished now, in the midst of a complex civilisation, and by agencies not altogether fitted for so rude a task.

From what has been said, it must be at once obvious that Ireland is, under every point of view, an exceptional country. It is so because, till recently, it remained both geographically and morally isolated from the rest of Europe. It stood out of the highway of events, and so did not partake of the expansion and invigoration which they have communicated to the remainder of Christendom. It was a moral fossil, like India, the only difference being that India is a civilised, while Ireland is a barbarous fossil, but both these extremities of the Caucasian area have been so shut out from the influence of passing events during the whole historic period, that they now present us with the sad spectacle of at least partial paralysis in all the functions of their higher life, the principal evidence of returning vitality which they have yet afforded being rather strong convulsions, painful to themselves and troublesome to their nurse.

Ireland has been often spoken of by historians and statesmen as a country unfortunately arrested at an incipient stage of its national life, by the intrusion of a stronger and more civilised race, who thus prevented the natural development of its intellect and institutions,

for which, the attempted substitution of their own laws, customs, and cultus, was a very inadequate, because radically inappropriate, compensation. And there is great truth in this statement, which, however, only involves an exposition of effects, not of causes. Ireland was susceptible of this institutional arrestment because of the feebleness of her national life, and this feebleness was due to the effeteness of her Celtic type, not adequately invigorated, like that of Britain and Gaul, by a sufficient infusion of the classic element from the south, and the Teutonic element from the north. Nor are we quite sure that even this goes to the root of the matter. If from her extreme isolation in the far Atlantic, Ireland, during the historic period, was imperfectly Teutonised and not at all Romanised, may she not have had an equally exceptional destiny in the prehistoric period?

This is a subject deserving of grave consideration, even at the hands of statesmen and legislators. No mistake could be greater than to suppose that the nations of Europe are what we now find them, simply as a result of events transacted during the historic period, and so more or less definitively within our ken. As regards the classic peoples, for example, the important cycle of Cyclopean civilisation has passed through all its successive phases, from dawn to extinction, ere history or even tradition commences. So there cannot be a doubt that the Celts had passed through a period of power and comparative culture, ere they succumbed to the shock of Roman conquest. Brennus was probably not the first any more than the last Gallic chieftain who found his way over the Alps, now is it likely that the Gauls who invaded Greece were the first intruders of their race upon the sacred land of Hellas. Perhaps it is not too much to say, from the data now in our possession, that the day of Celtic greatness must have antedated the Christian era by at least one if not two thousand years, their Drudicial culture and the use of war-chariots allying them to the era of the great Egyptian and Oriental monarchies, if not to an age still more remote. Now the attainment of such a position, implies much previous discipline, involving, among other things considerable racial interaction, the precycle of Roman and Gothic colonisation. And, judging by her historic experience, there is some reason to think that Ireland may have participated but imperfectly in this prehistoric colonisation, and hence, perhaps, the large remnant of prognathism, the imperfect nasal development, and other indications of organic rudeness and imperfection attaching to large sections of the peasantry, more especially in the south and west, and by which they are unfavourably distinguished from the Highlanders, Welsh and Britons, to say nothing of the more effectually developed English and French.

If there be any truth in the foregoing views, it must be at once obvious that the Irish problem is not institutional but racial, and that the unfortunate speciality of the Sister Isle is not primarily misgovernment, but racial effecteness, the effect of imperfect colonisation. Now whether this effecteness antedates the Celtic era, may still remain an open question awaiting solution from farther inquiry at the hands of Anthropologists, but it certainly and without any doubt postdates it. Ireland has not been Teutonised to the same extent as England, France, Lombardy or Spain. But a Teutonic baptism was a racial necessity of the Celtic area, and it was accordingly provided in the shape of Gothic, Frankish, Saxon and Scandinavian invasions and settlements. Now Ireland partook of the last, when the Norwegians settled at Dublin, Waterford, Cork and Limerick, the only towns of any significance at the period of the English conquest. But their settlements in most of these places seem to have been principally urban, and so quite distinct in character from the Saxon conquest of England, and the Frankish conquest of France. It did not leaven the entire population by the introduction of a new racial element, and it did not discipline them by the institution of Feudalism. At farthest, it but prepared the way for the English, and along the eastern coast, laid the foundation of the Pale.

We are now then in a position to understand the real function of English conquest and colonisation. It was supplementary to the utter want of Roman rule, and the imperfect Teutonic baptism, by which Ireland has been unhappily contradistinguished from most of the remainder of the Celtic area of modern Europe. It was simply the carrying out of a great racial law—underlying, we may here remark, all small talk of peace societies, and all tall talk of political economists, *doctrinaire* statesmen, and other well-meaning but impracticable people, who would improve upon the plans of Providence, and make their revolutions out of rosewater. It was and is the terrible necessity of circumstances. From Londonderry to Cork on her eastern seaboard, Ireland, thanks to Danish, Norwegian, and British immigration, has been subjected to more or less effective colonisation, and with the exception of the old Norwegian town of Limerick, it is here alone that we find agriculture or manufactures, in an approachably satisfactory state. And even here, if we compare the condition of thoroughly Anglicised Baronies, like that of Forth near Wexford, with the neighbouring districts, we shall be impressed with the conviction, that even this colonisation, extensive as it was, might have been made more effective, with lasting advantage to the occupied country. We are aware that although calmly expressed, this is a terribly cruel utterance. But what if it be the truth. Euphuistic nonsense and beneficent

platitudes will not alter the laws of Nature, which have to be fulfilled under ever-increasing penalties, of which some are being paid by Ireland at the present moment. Compare Ulster with Munster, or Leinster with Connaught, and you will begin to understand what effective conquest and colonisation, even at a comparatively late period in European history, might have done for "old Ireland" as our Hibernian friends so fondly phrase it. But if you would know the full loss of Ireland in not partaking of Roman civilisation and Teutonic colonisation, simultaneously and proportionately with the remainder of the Celtic area, you must compare "old Ireland" with England, or the lowlands of Scotland, or the north of France. "Ireland for the Irish" is no doubt a splendid war cry, and carries with it a semblance of justice and a sound of patriotism, but in sober truth it is precisely where Ireland is most Irish that it is most poverty stricken, and where it has been most colonised, that it is most prosperous.

Such, then, are the facts. Now what do they imply? The application of our nostrums, say the *à priori* legislators. We will administer any number of "Acts of Parliament" to Ireland, till she is well! She has been injudiciously treated—that is all. We will give her just laws and amended institutions, and await the result. Ah, my friends, you told us the same story about Mexico and the South American republics—and what have you made of them? Miserable failures all, the old Indian blood proving too strong for you and your paper constitutions. No doubt Ireland has been misgoverned, as France and England, Spain and Italy once were, when the iron-heel of the Goth was stamping out their ancient institutions, and his sword was implanting the germs of those which were to succeed them. The pity is that these things were not done for Ireland at an earlier date, and then perhaps a Scandinavian colonisation might have rendered an English conquest unnecessary—and so impossible, as happened in Scotland. Again, we know that these are very unpleasant utterances, quite unsuited to any platform—even that of "the house"—but supposing that they are true, will unanimity in their condemnation render them false, or the consequences which they imply, nugatory?

And do we then despair of Ireland? By no means. On the contrary, we think that she is now in the very crisis of her racial regeneration. Hence her grief. Two hundred thousand patriotic Milesians are not wafted over the Atlantic annually by purely Favonian breezes. No such exodus ever did take place save under a certain measure of compulsion. We would not undervalue the suffering which this implies. Our consolation arises from the perception that it is not a perennial but epochal phenomenon, due to a

combination of special, and, in a sense, exceptional circumstances, recurrent only at rare periods of ethnic commotion. Such an exodus implies much, not only to the country of its reception, but also of its ejection. To the States it is the counterpoise of the German element. To Ireland it is the preparation for a more effective Teutonic-Celtic development, akin to that which has been already accomplished throughout a large portion of Britain. To both it must prove ultimately beneficial, if only as a fulfilment of the law of Nature, who abhors lengthened periods of isolation and stagnation, and generally supplements these by succeeding periods of emigration and racial regeneration.

We have said that Ireland was not conquered and colonised at the right time ; we meant for its present peace and well-being. Contemplated from the mundane stand-point, this, like all other great racial movements and historic events, resolves itself into the manifestation of a law, whose operation is unerring, and whose ultimate results cannot fail to prove beneficent. It would seem that most social baptisms are partial, and what we would call imperfect ; thus in the case of the great Teutonic colonisation of the old Celtic area, we find that in Britain, the Highlands of Scotland, the mountains of Wales, and the Peninsula of Cornwall, were reserved, in a measure, as Celtic preserves, to react, at various periods, with considerable force, on the more Teutonised area of the central and eastern provinces of the island. The heptarchy reaped the first result of this reservation, in the predominance of Wessex ; and Britain probably will not have gathered in the final harvest from this arrangement, till the close of the present cycle of European civilisation, when, once more effete and exhausted, she will again await her renewal at the hands of a ruder and less gifted but more muscular type than the then overwrought and effeminate remnants of her imperial greatness and her refined culture. We see the same phenomenon of reservation, as respects France, in Brittany and largely throughout the south ; we see it again, as to Spain, in the two extremes of Biscay and Andalusia. Similar remarks might be made in the classic area, where, for example, Magna Græcia remains but imperfectly Latinised and still more imperfectly Teutonised to this hour. The purpose of this reservation appears to be the more effective preservation, and ultimate resurrection, of the temporarily submerged type ; now, thus contemplated, Ireland is but the extreme west of the Celtic area of Europe, the last and best preserved retreat of a refined, sensitive, and intellectual race, already, through its better baptised divisions, in the van of civilisation, and apparently preparing for the resumption of imperial supremacy, as the concluding act of the great drama of European civilisation.

This brings us to the mission of Ireland and her place, not merely in British history, but in the great scheme of humanitarian development. No man capable of estimating the forces which have carried civilisation and empire on their north-western course for the last five thousand years, can doubt their inevitable culmination at the terminus of their stupendous march. Rome—whether we contemplate her geographically as a Mediterranean not an oceanic power, or as a heathen not a Christian empire, was obviously not the terminus of the imperial movement, nor the closing scene of the European drama, whose fifth act is only now commencing. In some previous papers we have shown that this must be performed not on a classic but in a Celtic area, not in Greece or Italy but in France or Britain, and preferably in the latter; hence the inordinate growth of London, so ludicrously disproportioned to the merely metropolitan demands of Britain, but perfectly in accordance with its present position, as the exchange of the world, and its impending greatness as the capital of civilisation. But this implies the exercise of a mundane power on the part of the British people, of which we have the faint promise and dim foreshadowment in their present mercantile influence and colonial extension, and perhaps also in the extent to which their institutional example has already modified most of the once despotic governments of Christendom; but true imperial leadership implies far more than this, especially when that leadership is to be based on a Celtic area, and to be exercised by a classically and Teutonically baptised but nevertheless radically Celtic population. For this implies—in addition to the mercantile enterprise, manufacturing industry and mechanical ingenuity by which Britain is now so especially distinguished, nay, in addition to their respect for law and their consequent capacity for the enjoyment of a well regulated liberty, by which her people are so happily characterised—an æsthetic culture second, if second, only to that of Greece, together with a refinement and delicacy of thought and feeling, a sensibility to emotion and a profound sympathy with nature, never reflected in the literature of either a Classic or a Semitic people, and awaiting its full and effective expression at the hands of those who have already produced a Shakespeare and a Shelley in poetry, and who, despite philistinism and the all-pervading worship of mammon, still prevail to speak of literature in the words of Matthew Arnold, and of art in those of John Ruskin.

Now we are fully aware that if there is to be a Celtic as there was a classic empire, it must, like its predecessor, be dual, and that in this division France enacts the part of Greece and Britain that of Rome, but, we would add, of Rome spiritual as well as temporal. Now it is her Celtic elements that can alone qualify her for the former function, and hence, perhaps, the distinct preservation of the Welsh, Gaelic,

and Erse speaking peoples, within the narrow compass of these highly civilised British isles to the present hour. They are so much latent force that cannot be discounted for ever, and must tell on the tone of the national mind, when the exaggerated practicality and vulgar materialism of the present shall yield, in due time, to the nobler aspirations and grander purposes of the future. Now the special quality of the Irish, as contradistinguished from the British Celt, whether southern Loegrian or northern Gael, is not strength but delicacy, not force but refinement, not vigour but spirituality—the very qualities that we want imported into our literature, our art, and, we may add, our religion. But why then, it may be said, have the Irish not manifested these rare gifts more frequently and in richer profusion during their connection with England, and notably in the literature and art of the last two or three centuries. This brings us back to the history, and so to the misfortunes, of their unhappy country.

As we have already seen, the speciality of Ireland is the imperfection of its ethnic baptisms and the consequent postponement of its racial regeneration; so that while France and Britain have been passing through a great cycle of Teutono-Celtic development, under which their national life has attained to vigorous manifestation both in thought and action, the comparatively isolated land of Erin has been struggling in the throes of a belated conquest and colonisation. Combined with this it has also been subjected to another speciality, that of continued dependency, which has only of late ripened into complete incorporation. To the eye of an Anthropologist these latter specialities were but a natural result of the former, and both were due primarily to geographical isolation, which has now happily ceased. As already remarked, from the mundane standpoint the seeming loss of these many centuries of national life is doubtless a small matter; nor can we doubt but the coming ages have an ample compensation in store, both for humanity as a whole and also for the suffering people in particular. But, nevertheless, as seen from the immediate proximity of Britain, and yet more as felt by a sensitive and cultured Irishman, few spectacles are more melancholy than that of the intellectual desolation of the sister isle, whose richly gifted sons should have furnished some of the foremost names in the annals of European culture, but for whom we look in vain when we would seek the compeers of Dante and Shakespeare, of Raphael and Michael Angelo, of Bacon and Newton, of Voltaire and Goethe. Italy, as we have seen, furnishes nothing similar; for though subdued in arms she still remained supreme in intellect. To find a parallel we must go to Greece, exhausted by her many centuries of classic civilisation, and then writhing under the iron heel of Turkish barbarism.

Would we then be understood to imply that either individuals or nations were responsible for this? By no means. It was the terrible inevitability of circumstances. As the last province of the Celtic area to be baptised, Ireland is naturally the last to be regenerated. If it is late in receiving the morning rays of modern civilisation, it was also late in losing the vesper glory of Celtic culture. When Gaul and South Britain were Roman provinces, Ireland still retained her Celtic language and institutions untouched, so that when the Christian missionary landed on her shores the literary dialect of the national tongue was spoken at her courts, the Druid with his sacred traditions unbroken, still officiated at her altars, and the Bard with his epic and amatory poetry in perfect preservation, still sung his inspiring strains as he had done in the days of Oisín, and for a thousand years before. And, although Norwegian kings had reigned for centuries at Dublin, Waterford, and Limerick, Erse still remained the mother tongue when Brian Boróime won the battle of Clontarf, and gave the Irish their last chance of founding an independent and Celtic nationality, which, here, if anywhere, might have been expected to survive in its integrity. And, perhaps, sentimentally, we may be permitted to regret that it did not—if only for the sake of the commonwealth of letters, which has thus lost, if not a language, then a literature, unique in character and abounding in mythology, poetry, and tradition from ages now virtually prehistoric. The day for fully appreciating our loss in this matter, however, has not yet arrived. Classical pedantry and Saxon philistinism can still afford to despise Celtic as they once did Oriental studies; but the lettered or unlettered barbarism that would neglect the roots of the indigenous civilisation of half Europe cannot last for ever. And so a day for the profound and earnest study of Celtic history and literature will doubtless yet dawn, and when it does, Ireland will not be wanting with another O'Donovan and Eugene O'Curry to assist in the process, nor will her contributions to the common stock of this peculiar scholarship be accounted wholly unworthy of attention.

But, to return to our more immediate subject. The true Pagan culture of Ireland, like that of all Europe, whether Classic, Celtic, or Teutonic, sank into dim eclipse before the triumphant diffusion of Christianity. This is a matter for whose honest and searching investigation the age is not yet prepared. Suffice it, then, that it was not the Norsemen nor the Anglo-Normans, but the Christian priests and their zealous converts who made the first and most destructive attack on the venerable edifice of Druidic learning. They exterminated the entire priesthood, and with it, the scholarship of Celtic heathenism, leaving only the Bards to sing in martial strains of the heroic deeds of an age and faith for ever gone. Ireland is rather valuable as an illus-

tration of this time-honoured process of sacerdotal destruction of alien records, as it was not here complicated by the foreign element of Roman invasion, so that we have the extermination of the Druids and the loss of their lore, as the effect, pure and simple, of the triumph of a hostile faith. Let not the spirit of the foregoing remarks be misunderstood. Druidism, together with that phase of Celtic life and development, whereof it was the more intellectual expression, had, doubtless, served its purpose in the great economy of the world, and so it was cast aside like an outworn garment. But we could have wished, that in this far off Ireland, as in the yet more remote Iceland, the form and purpose of the bygone time of extinct heathenism had been fully preserved at least in written records, for the study of posterity. But, as already hinted, perhaps these regrets are premature, if not superfluous, for the generation which has decyphered the hieroglyphics of Egypt and the cuneiform inscriptions of Assyria, which translates the Veda and attempts to interpret the Avesta, can scarcely continue to neglect Celtic antiquities—pedantry and Philistinism to the contrary notwithstanding.

The fact that Druidism in Ireland succumbed to Christianity, is no proof of any especial weakness in its Celtic elements, as a similar subsidence of heathenism occurred sooner or later over the whole of Europe, this being, as we have elsewhere shown, one phase of that duplex invasion, moral and physical, to which the exhausted Classic and Celtic areas were then subjected; while the well-deserved fame of the Christian Irish schools in the seventh, eighth and ninth centuries, is an indication that whatever defects there may have been in the social or political condition of the Irish people at this period, the evil had not extended to their educational institutions. The fatal weakness of the Irish intellect is best evidenced in the fact that this roseate dawn never brightened into the meridian splendour or matured into the vesper glory of a perfect day. It was a fair but delusive promise, that thus far has had no fulfilment. Scotland, which produced a mediæval Duns Scotus, has also given us a modern David Hume and Adam Smith. While the Venerable Bede and the English Alcuin, have not wanted successors, whether for learning or ability, in recent generations. But who among his countrymen shall we name as the compeer of John Erigena? We are aware that the Irish speak of this as one of the disastrous effects of English conquest, which not only arrested their political and social, but also their intellectual development, at a critical period; an assertion, perhaps, not wholly devoid of foundation, but to which their social and political condition at the period of the English invasion gives but little confirmation. From the battle of Clontarf to the landing of Strongbow, there was

nothing external to prevent, and everything to induce, the Irish people to coalesce into at least a federative nationality. Nor can we doubt that had the power of the Norsemen been as great in Erin as that of the Franks in Gaul, or the Saxons in England, this most desirable result would have been accomplished. But the first tidewave of the Teutonic immigration was not competent to this. It left Ireland, over its larger expanse, still in a state of Celtic exhaustion and clannish confusion, neither adequately baptised by Scandinavian blood, nor effectually reorganised by Scandinavian institutions. And the English invasion was the consequence; this being the form in which, from geographical position and other circumstances, Ireland had to receive the completion of her alien baptism. Now a country so circumstanced, to all appearance so utterly devoid of the simplest elements of national regeneration, could scarcely have emerged unaided, into the full vigour of that new intellectual life, which was manifested throughout the greater part of Western Europe. To have done so, it must have proved an exceptional member of the Celtic family of nations, whose destiny it has been to undergo a thorough Teutonic baptism as a part of their preparation for that vigorous, moral, and material development, to which they have attained under the regenerative and expansive influences of modern civilisation.

Again, let not the tenor of these observations be misconstrued. We do not undervalue Irish genius. On the contrary, as already observed, we regard it as possessing a peculiar delicacy, refinement and susceptibility, in virtue of which it is destined, in a more poetic and spiritual age, to surpass that of either France or Britain. The fact that Ireland is the last province of the Celtic area to be intellectually developed under the influence of our modern material civilisation, and predominantly analytical scientific culture, is by no means a proof that she is the lowest in the scale. The indication, at least to a certain class of minds, is perhaps the very reverse of this. The true Irishman is intuitive and synthetic in the cast and character of his intellect, manifesting in this, as in much else, a certain orientalism in his gifts and proclivities, not easily explicable by our present historic data, albeit Archæology gives some faint promise of ultimately solving this racial mystery of the *ultima Thule* of European civilisation.

But it would be unfair to regard the existent Irishman as the perfection of his type. Save in exceptional instances, he is not so in the sense in which an Englishman or Northern Frenchman represents the regenerated Celt of his area. The ethnic baptism of the sister isle is yet far from complete. The process of racial amalgamation and supercession is still in active operation. The great exodus is an event

of which Irish history affords no precedent, and which for its extent and ethnic importance, is unexampled in the annals of any other portion of the Celtic area. The effects of this movement will be felt for centuries, nor can it fail to be followed, in due time, by a considerable British immigration, which may ultimately assimilate Munster and Connaught, to at least the ethnic condition of Leinster and Ulster. Now we would not insinuate that it will be necessary to wait for the completion of these processes, ere we can expect an effective display of Irish genius; albeit historic Greece was an ethnic product of the racial interfusion of the Heraclidæ and Hellenes, so accurately portrayed, prior to their amalgamation, in the *Iliad*. So the Italy of Dante and Tasso, of Titian and Michael Angelo was the result of Gothic colonisation; while Gaul and Britain had to wait for many a century ere they emerged as the France of Racine and the England of Shakespeare.

It has been said that Providence is in no hurry. Its steps are timed, not simply by centuries, but millenniums, and one of the latter has now elapsed since the landing of the Norsemen. Moreover, we live in an age when political, social and intellectual movements have been accelerated, and when, consequently, moral causes ultimate more rapidly in their appropriate effects. Ireland is no longer the isolated Erin of the past. Steam has bridged the Atlantic for her retreating Celts. It has yet more effectually bridged the seas between her and Britain. She is now an integral portion of the European system, and must be assimilated in culture to the area of which she is so fair a portion. We do not expect her to sympathise with the philistinism of the nineteenth century. We do not think it desirable that she should do so. Her mission—if she has one—extends beyond long chimneys and profitable investments. Her higher inspirations must come from the age as yet but faintly dawning. She is the foundling of the present. She will be the darling of the future; the spiritual complement to England's material power; the intuitive supplement to Scotland's coercive logic; the fecund mother of sages and poets, painters and composers, in that great day, when the revolving cycle of Celtic genius shall strike the hour, kindred to that of Greece, when she breathed the Parian into life and framed her unapproachable language into the rhythmic cadences of an immortal literature.

Of course, our Anthropological readers will now be at no loss to understand that we do not put unlimited faith in the prescriptions of statesmen and political economists for the solution of "the Irish difficulty." In its main features and in its producing causes, this lies largely beyond the reach of their art and without the sphere of their wisdom. The ills of Ireland that legislation can remove are on the

surface. The utmost that can be done in this direction is but the removal of impediments to her prosperity. We would not undervalue just laws and good government. But in all the instances with which history has rendered us familiar, these things were essentially effects, not causes, that is, they were the growth of circumstances, and so the reflection and expression of a people's social, moral, and intellectual condition; not an extraneous force, not an imported commodity, but the natural product of their national life. Institutions, ere they can discharge vital functions, must be a part of the organic structure of the body politic. Custom is older than law. Enactments, when effectual, are but the echo of an unwritten code. All that legislation can really accomplish, is but to formulate the social elements already existing in a community. "Acts of Parliament" which transcend this, are an incumbrance. Imperial edicts that go beyond it, are a restriction. We do not expect people who believe in paper constitutions to accept these simple truths. They think nations can be made; we, on the contrary, believe they must *grow*, and that the racial elements of which they are composed will determine the ultimate form they are destined to assume.

The social and intellectual regeneration of Ireland is simply a question of time. It was not statesmanship that produced the clearing exodus, by which not only the superabundant Celtic, but also pre-Celtic element is being reduced within manageable limits. And it is not by statesmanship that the invigorating British immigration is to be effected. Irresistible circumstances produced the first, and will likewise accomplish the last of these great ethnic movements. The age of conquest and confiscation is happily past, but the age of monetary transfer and peaceable colonisation has arrived. Irish agriculture and manufactures only require British skill and capital for their development and they will obtain them.

And this brings us back to what the reader will doubtless have seen was the underlying idea of this paper, namely, the imperfect colonisation of Ireland in the past, and the possibility of an effective English immigration in the future.

We suppose no Anthropologist need be told that the popular and traditional notion about the Danes and Norsemen being simply marauding viking, is wholly false. These daring sea rovers may have acted as pioneers, but throughout Britain and Ireland they were generally followed by merchants, artisans, and commercial mariners, and the misfortune of Ireland was that, whether from her remoteness or the growing exhaustion of Scandinavia, she received a very inadequate supply of these hardy and industrious settlers. But this was followed by another, arising out of the special character of the En-

glish immigration during the slow and troubled process of conquest and occupation. The Anglo-Norman was pre-eminently a soldier—not a worker. He needed Frank and Saxon to precede him for the success of his stringent yet chivalrous feudalism. Had the rural population of Ireland consisted of Teutono-Celtic agriculturists, in place of almost purely Celtic clansmen, he might, and probably would, have made it a second England—albeit, as well remarked by Goldwin Smith, feudalism implies a king as the apex of the social and political pyramid, and this important element Ireland never possessed, so that her barons sunk into chiefs, and society remained in a state of chronic disorganisation. From the accession of the Tudors to the battle of the Boyne, repeated confiscation only made confusion worse confounded; this summary and profitable process of punishing rebellion only sufficing for the introduction, on each occasion, of a fresh flight of unprincipled harpies and political adventurers, whose object was not industrial enterprise, but legalised spoliation. To this, however, there was a partial exception in the rather extensive colonisation of the northern and eastern counties of Ulster under James I, and its completion by the citizens of London under William III; and we see the effects of this introduction of a true industrial, and, therefore, really civilising, element in the present prosperity of Belfast, Coleraine, and Londonderry. Not, we apprehend that Ireland ever will be as effectually Teutonised as England, or the Lowlands of Scotland; Cornwall, Wales, and the Highlands, show with what tenacity the Celt holds his own in the west even of Britain. Now, Ireland is pre-eminently THE west of the entire Celtic area of Europe, and so probably will remain to the end, less baptised with alien blood than most of her neighbours. Moreover, it should be remembered, that in receiving an infusion of Scotch or English immigrants, Ireland only obtains a Teutono-Celtic colonisation. And this probably accords with her place and destiny as the last and best preserved retreat of the Celtic race in the past, and so, perhaps, their finest, because purest exponent in the future.

The application of the foregoing remarks to the minor details or special features of Irish politics is so easy, that any formal attempt of the kind here would be superfluous. The question of the Established Church, for example, is part of a larger whole; for its maintenance or disendowment involves principles whose application cannot be limited to the Sister Isle. Religion, as a social element, no longer looms out in the vast and almost overwhelming proportions which it assumed in the sixteenth and seventeenth centuries. The more earnest attention of the general public is now absorbed by politics rather than ecclesiastics, while literature and science largely occupy our higher minds, to the

displacement of theology and its accessories. Hence "the Church" as an institution, whether Catholic or Protestant, is of far less significance than in former centuries, and so a universal disestablishment is looming as a by no means remote possibility in the future. It has already been accomplished in America, and may impinge on Europe through Ireland. Indeed, without an arrestment of the present predominant tendency to institutional disintegration, we may say this, like much else, is an inevitability. But let no one suppose that Protestant disestablishment will prove a panacea for the ills of Papal Ireland. These, as already remarked, are racial not institutional in their origin. That the Reformation, as a Teutonic movement, introduced a phase of faith and worship ill-adapted to the Classic and but imperfectly suited to Celtic nations, there is no doubt but the Cornish Wesleyan, the Welsh Calvinistic Methodist and the Presbyterian Highlander, amply suffice to show that under favourable circumstances, Protestantism is by no means incompatible with a very strong infusion of the Celtic element. The truth is that the Irish are Catholics, not because they are Celts, but because they were oppressed by the English Protestants, whose creed they rejected, not from conviction but patriotism. The religion of the Celt as a racial speciality, has yet to be developed, and when it is so, we may be quite sure that it will differ alike from the gross sensuousness of the Classic, and the cold intellectuality of the Teutonic phase of belief and worship. But in that development France and Britain will have to be consulted as well as Ireland.

It is the same with land tenure. You cannot deal with this as a purely Irish question. There is no doubt that injustice was done both in Ireland and the Highlands, when the common land of the Sept was vested as private property in the chief, and the participant clansman reduced to the condition of a tenant at will. But it was an injustice that must at some time have been perpetrated in England and France, albeit the records of this "legalised spoliation" have utterly perished. But it is now too late for modern legislation to recognise this primitive condition of things. The Sept, like much else that was once a part of the organic framework of society, has perished, and the nation has taken its place. Now it is quite possible that a time may come, when the land, which no man has made, any more than he made the air and the sunlight, no man will be permitted to possess absolutely, but only to use under conditions, appointed by the State, as sole and inalienable proprietor of its own territory. But this is a very different thing from that exceptional legislation which would vainly endeavour to satisfy Irish discontent by an impossible return to Brehon laws and clannish usages. Again, let us clearly understand

that the inevitable future of Ireland is not a return to the defunct institutions of primitive Celtic society, but a march onward with her compeers, into all the grand possibilities of modern civilisation. The exceptional condition of Ireland in the past, was due to her isolated position, and as the latter has ceased, the former cannot continue. Her obvious destiny is a racial and social assimilation to the remainder of the Celtic area, which implies that she must proceed with her baptismal regeneration, by the time-honoured processes of emigration, immigration, and amalgamation, and then base her progress and prosperity, not on foreign aid or alien leadership, but on the irrepressible energy and exhaustless resources of her renewed population.

Similar remarks are applicable to the industrial future of Ireland. She is simply behind England and France, as the latter were belated in comparison with Italy. The material prosperity of the old Classic and Celtic areas, as they gradually emerged into renewed social and national life, after the confusion attendant on the fall of the Roman Empire, was due in large part to the infusion of fresh energy, by the immigrant population, which vitalised and reinvigorated the municipal institutions and trades established by the Romans, and enabled them to develop into the corporations and guilds of the middle ages. But as Ireland never enjoyed the advantages of the Roman Municipia, so she only exceptionally partook of the commercial enterprise and industrial energy of the Norsemen. To the latter, however, she owes the foundation of whatever prosperity has been attained by Dublin, Cork, Waterford and Limerick. Still, as already remarked, their influence was local and almost purely urban, so that in reality the great work of social edification and industrial organisation, through all its successive stages from the clan to the nation, has been effected under English leadership, supplementing, as yet we fear but imperfectly, the want of that Roman law and Gothic force, to which the remainder of Western Europe owes so much of its present wealth and civilisation. Thus we see that in her industrial, as in many other aspects, Ireland, over a large portion of her area, is still an anachronism. She is at best mediæval rather than modern, but in truth there is much both in Munster and Connaught, that a feudal noble or an Italian podesta would have pronounced barbarous, and on which a Saxon yeoman or English alderman of the early Norman kings, would have looked with that pity which borders on contempt. Ireland, we must repeat, suffers from imperfect colonisation and insufficient discipline, and as a result, she is still in the turmoil and commotion of that racial displacement, which was effected over most of the west of Europe, from the fifth to the tenth century. But time,

the great healer, has doubtless his compensations in reserve, though for these, as for other gifts of the gods, we must wait the Divine pleasure—or, if our Positivist friends prefer it, the operation of unerring law—a process not to be hurried, even by the omnipotence of Parliamentary enactments.

We have said that Ireland is an anachronism; she is so theologically, intellectually and socially, and she is so in her agriculture, manufactures and commerce. But this cannot continue. Nay, it is the almost unexampled rapidity with which this exceptional condition of things is ceasing, that occasions most of the discontent which now pervades the excitable but unreflecting population of the Sister Isle. Her cottar tenants are evicted, not slowly but in all haste, to make way for the modern agriculturist, who manages his farm on the Scotch or English model. And this great change is effected, not as it was with us, by slow growth and spontaneous action from within, but by example and influence, and not seldom by actual immigration and alien occupancy, from without. It is no wonder that under such circumstances, the land question is a source of irritation to the people and of disquietude to their rulers. The process of transition is too rapid for the comfort of either its agents or its subjects, and the wonder is not that we have a few agrarian outrages, but that we have not something occasionally approaching in its proportions to a servile or peasant war—a disaster from which the stupendous exodus could alone have saved us. Now what we have to do is simply to let this inevitable process of transition take its course. By meddling we may mar, that is, delay and disturb it. We may aggravate or we may prolong the feverish condition of the patient by our foolish nostrums. But the period of crisis has come, and he must pass through it, as other and equally good men have done before him.

It is the same with manufactures and commerce. Except in the North, they are still awaiting their inevitable development. Now, judging by the experience of the remainder of Europe, this cannot well take place, till the process of racial displacement and commotion has in a measure ceased. Security is a *sine qua non* of commercial prosperity, more especially in modern times, when capital so easily takes wing, and credit is subject to such fatal panics. But there need be no fear as to the ultimate result. The Irish are an ingenious and enterprising people, and they possess a natural taste, far surpassing in delicacy and refinement that of either the English or Scotch, approaching in this, as in much else, a French rather than a British standard. Strictly speaking, it is not the linen trade of Belfast, but the lace trade of Limerick which most truly represents the manufacturing skill of Ireland. Of course we do not expect the untravelled English reader, whose model Irishman is the mason's

hodman and bricklayer's labourer, to accept these conclusions. He can only judge by what he has seen. But supposing a Frenchman had only seen a Somersetshire peasant, fresh from the plough, could he conceive that out of this rough material, time and circumstance would ever frame the cunning hand and contriving brain of the skilled artisans of England. Ireland, we repeat it, is a vast reserve of intellectual resources for another and a better age than the present, when the finer rather than the stronger elements of humanity will be in demand. So, equally, she is a reserve of manufacturing skill, the needed complement to the hard practicality and almost grovelling utilitarianism of British industry, whose admitted want is taste. But as in her agriculture, so yet more in her manufactures, Ireland will doubtless be largely indebted to British capital and enterprise for her earlier steps. But once fairly started she has a path of her own, distinct from, yet allied to, that of the other clearly marked provinces of the great Celtic area of the west.

But it is time we should conclude, not because we have exhausted our subject, but our space. Our remarks have not been penned in haste, but are the result of many years' personal familiarity with, and residence among our Welsh, Irish and Gaelic fellow subjects. And as a result of such residence, we have not the least hesitation in saying, that the Celtic element, not merely as constituting the ethnic basis of our lowland Scotch and English population, but as represented in yet greater strength and purity by the sectional communities we have just named, is altogether underestimated, because totally misapprehended by the English public. We do not expect to change this opinion. It is sufficient that we know it to be erroneous. While the majority of Englishmen fancy themselves Saxons, or Anglo-Normans, they will of course despise the poverty-stricken remnant of the Celts. But the days of this popular fallacy are obviously numbered. Anthropology condemns it, and already in the eyes of those who have mastered the science of man, it is numbered with the prejudices of a bygone age. And whenever it shall be generally admitted that Britain is unalterably an integral portion of the Celtic area, susceptible of a Teutonic as of a Classic baptism, but nothing more, then will the day of justice to Celtic genius have arrived. We all know the beautiful and appreciative papers on this subject by Matthew Arnold, in the *Cornhill*. And these were written after only a few weeks' residence on the borders of Wales. But had he lived for years in her secluded valleys, and wandered not merely in the summer sunshine, but in the wintry mists among her mountains, and drank in of the enthusiasm of men to whom the names of Myrddin, Aneurin and Taliessin are still familiar as household words, we could fancy that

his sympathies would have been yet more deeply stirred and his noble eloquence have risen to yet grander utterances than those for which we are so deeply indebted to him.

It is the same with Ireland. You cannot know her people as a tourist. You cannot see them as they are, through the plate-glass of your railway carriage, or from the window of your hotel. To understand them you must live among them. They must know you ere you can know them—a truth of which most tourists, and not a few professed travellers, seem sadly oblivious. Not to aristocratic hauteur or philistine vulgarity, or sectarian bigotry, will they reveal the sacred sorrow bequeathed by six hundred years of defeat and humiliation. This sorrow and the love of country whence it springs, have never yet found befitting utterance in English words. The revealer of Ireland's heart is still to come. Thomas Moore was but the caged canary of a Whig drawing-room. There is more of the true soul of Erin in one air of Carolan, than in all the pretty melodies he ever penned. It is here we touch the key, by which alone it is possible for a stranger to unlock the deeper mysteries of Irish character. Ireland, like Scotland, must be interpreted through her music. The ecstasy of her joy, the agony of her grief, the ardour of her love, and the fervour of her patriotism, otherwise so silent or so extravagant, all find adequate and befitting expression through the medium of this universal language, where it still awaits that transfusion into our mother tongue, which, if we mistake not, will yet add another chapter of beauty and power to the ever-growing wealth of English literature.

GALL'S ORGANOLGY.

To the Editor of the Anthropological Review.

SIR,—On the second page of the leading article in your last number (p. 330), I read as follows:—"Why is it that psychology proper remains where it was 2,000 years ago? Solely because she was too proud or too ignorant to call in the aid of the physiologist and pathologist. So, too, the nearly hopeless and chaotic condition into which the discoveries of Dr. F. Gall, respecting organology, have fallen, is the result of, in the first place, insufficient foundation, and in the second, dogmatic teaching:" and in the next sentence but one, I am informed that "The discussions on the localisation of cerebral action,

before the Paris Anthropological Society, have inaugurated a new era in Science." Now, did the British student derive his opinions of Dr. Gall's discoveries from a perusal of his own writings, I should deem it superfluous to notice such comments as the preceding. Unfortunately, however, that vast storehouse of knowledge, and imperishable monument to the genius and industry of Gall, his work *Sur les Fonctions du Cerveau*, still remains a sealed book to the European public, demonstrating, with additional force, with each successive year's neglect, how greatly its author *was* in advance of his contemporaries, and *still remains* in advance of their successors.

Had I not been previously aware of Dr. Hunt's generous assiduity in blowing the trumpet for his friends, the Paris Anthropological Society, I should certainly have imagined that the announcement,—that the fact of the discussion of the localisation of cerebral action, before the Anthropological Society of Paris, inaugurated a new era in science, had been made ironically; that it had been adopted, in short, as a pleasant mode of rebuking some ill-judged pretensions put forth by the Society or its partisans, so extravagantly hyperbolic does it appear in the presence of the actual and long-standing position of this question. In the first place, it is a familiar fact, that there are a number of considerations which lead so irresistibly to the inference of the plurality of the cerebral organs that, to quote the words of Foderé, "they have been adverted to by almost all anatomists, from the days of Galen downwards, and even by the great Haller, *who felt the necessity (qui éprouvait le besoin)* of assigning *distinct* functions to *different* parts of the brain"; and Comte, the greatest of modern philosophers, says, "Two philosophical principles, now admitted to be indisputable, serve as the immovable bases of Gall's doctrine, as a whole; viz., the innateness of the fundamental dispositions, affective and intellectual, and the plurality of the distinct and independent faculties." In the second place, Gall left on record a series of observations of facts, which, he considered, justified him in associating the manifestations of twenty-seven mental functions with as many distinct localities of the brain; and no evidence has been adduced to invalidate Gall's conclusions, except, perhaps, in one instance, and in this it was not—as I pointed out many years since—the observations of this extraordinary genius that were at fault, so much as the inference he deduced from them.

It has too long been the fashion to advert, in a depreciatory tone, to the labours of Gall, in language which, whilst so conveniently vague and general as neither to require any definite knowledge, nor commit the utterer to any specific opinion, contrives to insinuate—by the enunciation of the merest platitudes as to the desirability of

collecting facts, and the undesirability of hasty induction,—that this great man was the inferior of the writer or speaker, in the caution and sobriety of judgment, which characterise the true philosopher. Surely, it is to be lamented, in the interests of science, that the critics of Gall give us no practical example of the philosophic method and cautious induction in the theory of which they are such masters. They appear to overlook the fact that—if an individual could collect and leave on record such a number of cases of coincidence between special development of brain and special manifestation of a mental function, not really connected with it—it should be tenfold easier to collect cases in disproof. Yet, where are they?

Not to refer to the stronger department of Gall's system, the larger organs of the propensities,—have his critics ever adduced, or can they now show us, an instance of a great mathematician, musician, or painter, small in the region of the brain, appropriated by Gall to number, music, or colour, or the portrait of the author of a dictionary, or a great linguist with sunken eyes? In short, whilst ready in *assertion*, so totally have they failed to illustrate their own precepts, that, having in view the wide divergence between their teaching and practice, one might be tempted to define "facts" as "a word constantly in the mouth of those who never collect any." Referring to this class of critics in his own day, Gall humorously, but sarcastically, remarked, "It would be difficult for such learned men to have recourse to so laborious a source of true knowledge as observation." Where a philosopher has, with patient assiduity, from boyhood to the close of a long life, devoted an unrivalled genius for observation to the collection of facts, and only after long investigation and close scrutiny allowed himself to found a conclusion from the evidence obtained; scientific names, even more eminent than those of our most distinguished critics, are not sufficient to release their bearers from the obligation of supporting their assertions by some kind of evidence, and in default of doing so, they are themselves exhibiting a glaring example of that hasty generalisation and want of philosophic caution they so glibly, and seemingly as a matter course, attribute to one of the most conscientious and painstaking observers of his own or any other epoch. In the mean time, let us not forget that when some supposed authority chooses to distrust the reliability of discoveries, not as the result of observation, but by assumptions furnished by self-consciousness,—whilst hundreds of followers prefer the easy task of echoing an opinion, to questioning nature for themselves,—additional numbers impart no additional solidity to the flimsiness of the foundation on which the original dictum reposed.

I have been intimately acquainted with Gall's writings for more

than a quarter of a century, and for a still longer period have lost no opportunity of testing, to the best of my ability, the soundness of his views with regard to the seats of the special faculties, and the result is that, with the exception of those regarding the cerebellum, I am prepared to defend them all, as substantially correct. That the list of the primitive faculties was perfect and complete, or our knowledge of the exact functions and relationships of those discovered,—particularly in the case of the intellectual faculties,—thorough and precise, Gall himself never pretended, and would have been the first to disavow. Gall never undertook the construction of a *system* of psychology,—in fact, expressly disclaimed the pretension of doing so; he simply announced, as a fact, that observation showed that the development of a certain part of the head was associated with the tendency to act in a certain manner, or with the capacity for doing a certain thing. Gall's error with regard to the functions of the cerebellum is greatly to be regretted, having exercised a most unfortunate influence in retarding the reception of his doctrines, by creating a distrust of his care and accuracy as an observer, which, as I long ago pointed out, the circumstances, when rightly understood, do not justify.

At a very early period of my studies, contemplating the nervous system as a whole, it seemed to me that the harmony, everywhere else discernible, was violated by placing the seat of a propensity, —making the female an object of desire, and capable of being called into action by *ideas*—outside the cerebrum. After a time, I found myself almost insensibly connecting the large development of the region of the cerebellum with acute sensation and intolerance of pain. I examined the opinion of physiologists with regard to the function of this part of the brain,—and finding my idea discountenanced by their writings, and influenced also by reverence for Gall, and still more by the cases that had come under my own observation, indicating a connexion between a prominent cerebellum and strong sexual feelings,—I came to the conclusion that I must be mistaken in my supposition. Doubt and curiosity had, however, been excited, and I at length determined to compare the relative development of the cerebrum and cerebellum in the lower animals with their character and peculiarities. In the course of two years, I examined and separately weighed the cerebrum and cerebellum in nearly every species of bird and quadruped to be found in the British Isles, endeavouring, where practicable, to ascertain the variations, and determine the average in six members of each variety. The following is a very brief outline of the facts I obtained, and the inferences I was led to draw from them.

Observations on horses, pigs, and sheep, show that castration very slightly diminishes the size of the cerebellum, but that the diminution is so trifling as not to counterbalance the congenital variations which occur in the size of the organ.

Castration does *not* diminish the relative size of the cerebellum compared with the cerebrum, the development of the latter organ being quite as much ; or if there is any ascertainable difference, even more impeded, by the effect of the operation.

Unilateral castration produces no perceptible difference in the development of the lobes of the cerebellum. Having removed the right testis from a kitten three days old, I examined the cerebellum at the age of one year and a quarter, but was unable to detect any inequality in its sides, though having placed it in spirits, I repeatedly made it the subject of careful scrutiny at separate intervals of time. An examination of the effects of unilateral castration, in the cases of a ram and a hare, furnished the same results.

In birds, the development of the lateral lobes of the cerebellum is strictly rudimentary, consisting almost entirely of the root of the fifth pair of nerves, and no pons Varolii, as a matter of course, is discernible. The median lobe, or vermiform process, however, attains in this class to an unusual magnitude ; so much so, that the proportionate weight of the cerebellum, compared with that of the cerebrum, is not inferior to the generality of mammalia, ranging from 1 to 4 in the swallow to 1 to 13 in the grey owl.

These peculiarities of organisation suggest two questions,—first, what is the function possessed by the mammalia which may be said to be rudimentary, or wanting, in birds, except in the portion of their body to which the branches of the fifth pair of nerves are distributed ?

Secondly, what function is possessed by birds in a degree as commensurately greater than other vertebrata, as the relative development of the median lobe of their cerebellum surpasses that of the latter ?

The answer to the first question was clearly cuticular sensibility. The thin and membranous skin of birds scarcely presents a trace of nerves,—which would have been thrown away with such a covering as feathers,—and manifestations of surface sensibility appear almost solely restricted to the parts concerned in the selection and deglutition of food.

In pondering on the second query, I was struck with the capacity of birds for traversing great distances, and supporting themselves in a medium of so much less specific gravity than their bodies, together with the infinite grace and elegance which characterise their motions. Such a capacity demanded great muscular power combined with an

extremely delicate sense of resistance, and necessitated the existence of a proportionately large nervous apparatus for generating, storing, and distributing, the appropriate nervous stimulus. In the crow, whose motions are neither rapid nor elegant, the weight of the cerebellum is $11\frac{1}{4}$ grains, and that of the cerebrum 129, being a proportion of 1 to $11\cdot4$, whilst in the common gull, who sails through the air in graceful curves, or, tumbling and darting in rapid flights, sports with the wind when at its highest, the weight of the cerebellum is 14 grains with a cerebrum of only 63: a proportion of 1 to $4\cdot5$. The swift sparrow-hawk possesses a cerebellum of $6\frac{1}{2}$ grains and a cerebrum of $36\frac{1}{2}$. The slow grey owl a cerebellum of 9 grains to a cerebrum of 120, being in the ratio of 1 to $5\cdot6$ and 1 to $13\cdot3$. Finally, in the swallow tribe, who may be said to live on the wing, the development of the cerebellum reaches its maximum, being, as compared with the cerebrum, 1 to 4. In birds, then, I consider we may regard it as an established fact that the development of the cerebellum (practically consisting of the middle lobe alone) always bears an exact ratio to the locomotive power.

The question now presented itself, what animals occupy the opposite pole to birds with regard to the manifestation of cuticular or surface sensibility? The answer is the cetaceans, in whom the sense of feeling is so acute as to enable them to communicate with each other at long distances by the vibrations of the water. Pursuing a living prey, and obliged at short intervals to seek the surface for air, and thus lose sight of it, without this special endowment of sensation to keep them apprised of the motions of the object of their chase, they would lose all knowledge of its locality at each breathing time. Their sensibility to pain also appears to be very acute; for I have been assured by an individual, who once saw an embayed porpoise put to death by some fishermen, that the cries of the animal when wounded were heart-rending and conveyed the idea of most intense suffering. In conjunction with this extreme endowment of surface sensibility, the cetaceans present of all animals the greatest development of the cuticular system of nerves which pervade the whole of the layer of blubber interposed in this family between the skin and the muscles, and form a network of extreme minuteness on its external surface.

Now there coexists with this maximum development of the cuticular system of nerves in the cetaceans, just as marked a peculiarity in the structure of the nervous centres, viz., an extraordinary development of the lateral lobes of the cerebellum. In the porpoise, the size of the cerebellum as compared with the cerebrum, is as 1 to $2\frac{1}{2}$, its unusual bulk being entirely due to the enormous development of the great lateral lobes, which equal in absolute size to those of man, far surpass

his or those of any other animal (with one exception to be hereafter mentioned) in the proportion they bear to the other nervous centres.

These facts appear to me to point irresistibly to the conclusion that the median and lateral lobes of the cerebellum have separate functions, the former being the great ganglion of the nerves of muscular resistance, imparting a knowledge of the relative position of the different parts of the body, and the centre of gravity, and constantly developed in the ratio of the animal's agility and balancing power; the latter the great ganglion of the nerves of cutaneous sensibility, and always developed in the ratio of the animal's endowment with this function.

Had however any doubts of the soundness of this conclusion lingered in my mind, they would have been dispelled by an examination of the cerebellum in the Chiroptera. These insectivora possess jointly the large lateral lobes distinctive of the cetaceans, and the large central lobe characteristic of the bird, and, in conformity with the views of the functions of these nervous centres just expressed, unite the fine tactile sensibility of the former class, with the agility and balancing power of the latter. The same knowledge of the relative position, the distance or proximity, of other bodies furnished to the cetaceans by the vibrations of water, the bat obtains from the pulsations of the air. Spallanzani found that bats when blinded avoided obstacles in their flight with the greatest precision, and this in places to which they were strangers. They flew with rapidity through apertures only just large enough to allow of their passage, and even avoided small threads stretched across the apartment, thus exhibiting an example of tactile sensibility so exquisite as almost to be equivalent to a new sense. The cerebellum in the bat is proportionately to the other nervous centres larger than in any other animal. In the common pipistrelle the average (drawn from six) is cerebellum .96 of a grain, cerebrum 1.78.

That there is a relation between the size of the occiput, and the sexual feeling, is I think undoubted, my observations on man impress me with this conviction, and in the horse, the ox, the sheep, and the cat, the diminished size of the nape of the neck in the castrated animal, when compared with the perfect male, is very preceptible. That the ancients were familiar with this relationship,—as well as with many other things, the knowledge of which was once supposed to be an exclusive appanage of modern times,—is evident from the lines

"Non illam nutrix orienti luce revisens,
Hesterno collum potuit circumdare filo."

Apollonius of Rhodes, also, in speaking of the passionate love of Medea, says, "The fire which devours her, attacks all her nerves and makes itself felt even behind the head in that spot where pain is most poignant when an extreme fervour seizes on all the senses."

In locating the sexual feeling in the cerebellum, therefore, I believe Gall to have committed an error of inference, rather than of observation. The convexity of the lower fossæ of the occipital bone and their protrusion backwards and downwards, really *have* a connection with the strength of the sexual feeling; but then these conditions are principally due to the development of the under surface of the posterior lobe of the cerebrum, and but in a minor degree to the size of the cerebellum, in the same way as the prominence of the eye, and pouching of the lower eyelid, indicative of philological talent, is mainly caused by the development of certain convolutions of the under surface of the anterior lobe which rest on the roof of the orbit. Not only is the range of variation or diversity in size, presented by the occipital region as a whole, much greater than the deviations from mean size exhibited by the cerebellum, but a larger *proportionate* share in causing these diversities must be attributed to fluctuations in the size of the posterior region of the cerebrum, than to fluctuations in that of the cerebellum, in harmony with the law, that the limits of variation increase in proportion as the functions of organs rise in the scale and become less indispensable to the continuance of life, as we see exemplified in the much larger range of variation in the size of the coronal region of the head—the seat of the affections connected with man's perfectibility and life in society—than in that of the basilar, the seat of those concerned with the conservation of the individual, or at most the family.

Gall's views of the functions of the cerebellum were greatly strengthened by several remarkable cases of loss of sexual feeling occurring after sabre wounds of the cerebellum, for which he was indebted to Baron Larrey. I think it scarcely admits of dispute that pathology offers irresistible evidence of a close connection between the cerebellum and the generative function. The number of cases of apoplexy in which irritation of the sexual organs has proved a correct diagnostic that the apoplexy was cerebellar, are alone sufficient to establish the fact. From my point of view, however, these pathological proofs of relationship are perfectly compatible with the location of the generative instinct in the cerebrum. A portion of the lateral lobes of the cerebellum approximating towards the mesial line must be associated with the *sensation of the sexual organs*, whilst a portion of the central part or vermiform process must have the duty of regulating and controlling the *ensemble* of the muscular acts and positions peculiar to the generative act, which are of a determinate character in different species of animals, and even seem to vary within certain limits in the different races of man. Now that there must be the closest connection between these two cerebellar

functions, and the instinct of propagation, is most certain ; for instance, we often see the latter called into activity in the dog, by the mere accident of his finding himself in a certain position. On some occasions—perhaps I should say normally—the chain of nervous action commences in the cerebrum on the presentation of the image of the female ; on others the spark of ignition lights on the other end of the train, and a peripheral excitant, by sympathetic influence awakens the cerebral desire. Such appear to be the relations between the external sexual organs represented by a portion of the cerebellum, and the true generative instinct seated in the cerebrum.

Let us now compare the comparatively venial error of Gall as to the functions of the cerebellum, with the strange blindness to the most notorious facts—viz., the structure of that interesting class the cetaceans, and the self-evident deductions to which they irresistibly lead—involved in the acceptance of the current doctrines of Physiologists as to the office of this portion of the brain. Dr. Carpenter's *Principles of Human Physiology*, which may fairly be regarded as an orthodox text-book on the subject, has for the last quarter of a century contained the following passage :—

“In proportion as the extremities acquire the power of prehension, and together with this a power of application to a great variety of purposes, still more in proportion as the animal becomes capable of maintaining the erect posture, in which a constant muscular exertion, consisting of a number of most elaborately combined parts, is required—do we find the size of the cerebellum and the complexity of its structure undergoing a rapid increase. . . . Man surpasses all other animals in the number and variety of the combinations which he is capable of exerting, and in the complexity of the combinations themselves. Thus, if we attentively consider the act of *walking* in man, we shall find that there is scarcely a muscle of the trunk or extremities which is not actually concerned in it, some being engaged in performing the necessary movements, and others in maintaining the equilibrium of the body, which is disturbed by them.”

Do we dream ? or does there really exist such an animal as a porpoise—which, devoid of “prehensile extremities capable of being applied to a great variety of purposes ;” without “the capacity of maintaining the erect posture ;” wanting in *every* feature described by Dr. Carpenter as indicative of a large cerebellum—yet claims the distinction of being the only animal smaller than man, which possesses a cerebellum equal in absolute size to this *erect biped's*, and vastly larger when compared either with the body considered as a whole, or with the size of the cerebrum.

Now I venture to say, that no such transparently fallacious assumption can be pointed out in Gall's writings, as, has thus been tacitly accepted without protest by the physiologists of Europe, and allowed

to form the staple article of their faith as to the functions of the cerebellum for the last third of a century.

The advent of Gall broke up the long night of darkness and error as to their own being, under which the human race had slumbered for ages. Sensation, perception, memory, judgment, imagination—the idola of the past, the stock properties of every psychological system from that of Aristotle downwards, instead of being primitive faculties, were clearly demonstrated, by the most masterly analysis, and the most unanswerable arguments, to be simply different degrees or consecutive modes of action, proper to each of the elementary intellectual faculties, and necessarily variable in strength in relation to subjects—specifically distinct. Gall studied the maximum or minimum exhibition of certain passions or capacities, compared with the extreme or defective development of certain parts of the brain, and when a vast number of concurrent experiences had satisfied him of a connection, named the primitive faculty by the simplest words indicative of its function to be found in the vocabulary of everyday life. He thus replaced the phantoms of the metaphysicians, which explained nothing, by terms which speedily asserted their vitality by being constantly heard in the mouths of the people, to assist them in defining and describing their fellow men, thus at once obtaining that sanction from the spontaneous dictates of popular common sense, which is the surest test of the truth of all fundamental ideas.

Dr. Gall himself, ascribed his discoveries to his having given himself ingenuously and unreservedly to the study of nature free from the bias of preconceived opinions and ideas, and without seeking to make his observations square with some *à priori* constructed system. Now it is characteristic of the labours of the true naturalist, the careful observer and honest interpreter of nature, who chronicles her aspects faithfully; that they possess an intrinsic value for all time, and ever remain a solid basis on which succeeding students may carry to a greater height the pillar of human knowledge. What then can Dr. Hunt mean, by stating that the discoveries of Gall have fallen into a "nearly hopeless and chaotic condition?" In the amount of work of the nature of discovery, he accomplished, Gall stands altogether unrivalled, and it is difficult to discern how he could have done more for the success of his doctrines, unless he had had the power of bequeathing to the world his genius, his industry, and his truthfulness.

There was in Gall a breadth and massiveness of intellect, a certain grandeur and nobility of character, which placed him beyond the reach of the jealousies of his contemporaries. The craving for instant appreciation, which besets smaller minds, was to him unknown. He always entertained a due sense of the dignity and importance of his re-

searches, and, confident of his place in history, never allowed his equanimity to be discomposed by the misrepresentations of which he was the object.

"My views of the qualities and faculties of man," says Gall, "are not the fruit of subtle reasonings. They bear not the impress of the age in which they originate, and will not wear out with it. They are the result of numberless observations, and will be immutable and eternal like the facts that have been observed, and the fundamental powers which these facts force us to admit." . . . "Here, then, terminates this work, which for fifteen years the public have been impatiently expecting. I should have wished to defer it still longer to bring the fruits of my researches to greater maturity; but the final hour draws near, and I must be content with leaving this first effort on the physiology of the brain far less perfect than it will be fifty years hence." . . . "If I had been a man to be gratified with a little temporary *éclat* I should have yielded more than twenty years ago to the desire of publishing the first views of a physiology of the brain; but I am prouder of the discovery of the slightest truth than the invention of the most brilliant system."

The great principles established by Gall, of the dependence of mind upon organisation, and the specialisation of the organs, have pervaded and leavened the mind of the age—written themselves in our jurisprudence, modified our views of education, given precision to our treatment of insanity, flavoured the novel, coloured the poem,—whilst thousands of intelligent men in England and America are believers in his doctrines, and avail themselves of their teachings in the practical business of life. That they are still rejected, misrepresented, and vilified by those who claim to represent the orthodox science of the day, far from being strange, is, I apprehend, quite "*en règle*," and merely illustrates some very familiar facts. In the great majority of mankind the strength of the feelings so vastly preponderates over that of the intellect, as to incapacitate them as judges on any subject on which the animus of class prejudices, has once been rooted in their minds by their teachers in early life. At all periods, the number of persons capable of thinking for themselves is infinitely small, and out of these, many are ready to follow science under the wing of the orthodox authorities of the day, reaping fame, and honour, and profit, and social position, who are not ready to sacrifice all these considerations—shall I say advantages—and embrace the martyrdom of ridicule, contumely, and neglect, in the cause of truth. However sad the reflection, it must be admitted that Truth in the England of to-day does not pay.

There are, however, exceptional circumstances to account for the opposition Phrenology has encountered, which fully explain the exceptional bitterness and animosity with which it has been attacked. Men with little minds, little heads, but great vanity, rebel against a

standard of capacity which gauges them correctly. Again, the whole of the genus humbug, the empirics and the impostors of the day, and men conscious of being at bottom thoroughly dishonest and unprincipled, instinctively recoil from a system which threatens to unmask their moral deformities to the eyes of the world, and reveal their true features despite a whole wardrobe of trappings of duplicity. Napoleon boasted of having greatly contributed to put down Gall. His own medical attendant, Corvisart, one of the greatest physicians France ever produced, was an admirer of Gall, and vainly endeavoured to introduce him to the Emperor. "Corvisart," says Napoleon, "was a great partizan of Gall, and left no stone unturned (*fit l'impossible*) to push him on to me, but there was no sympathy between us." In short, Napoleon confessed he felt the greatest aversion for those "who taught that nature revealed herself by external forms." Shortly before the announcement of Gall's discoveries startled the Parisian scientific world, the Institute had summoned courage to ask the first consul's permission to award a prize medal to Sir H. Davy, for his brilliant discovery of the metals of the alkalis. Consent was granted, but the soreness of national defeat rankled deeply within, and upon his hearing shortly after, that the greatest of his comparative anatomists had attended Gall's lectures, he broke out furiously at his levy, and berated the wise men of his land for allowing themselves to be taught chemistry by an Englishman, and anatomy by a German. "He scolded sharply," says Gall, "those members of the Institute who had shown themselves enthusiastic about my new demonstrations. This was the thunder of Jupiter overthrowing the pigmies. Immediately, my discoveries became nothing but reveries, charlatanism, and absurdities, and the journals were used for throwing ridicule—an all-powerful weapon in France—on the so-called bumps."

Dr. Hunt saddles Dr. Gall and his followers with being responsible for the limited acceptance of their science, which he states to be "the result of, in the first place, insufficient foundation, and in the second dogmatic teaching." The "insufficient foundation" should be demonstrated instead of asserted; but admitting it to be true—for the sake of argument—who are so responsible for the circumstance as the party with whom Dr. Hunt identifies himself, the professional anatomists and physiologists? These industrious cultivators of science have turned their special opportunities to such good account, that, half a century after the discovery, and the announcement of the fact by Gall, they have just found out—apparently to their great astonishment—that there really is a relationship between certain convolutions of the under surface of the anterior lobe of the brain reposing on the roof of the orbit, and the faculty of articulate language.

Strange to say, however, whether to excuse the long blindness of which they stand self-convicted, or from a misgiving that the public may begin to suspect that they have been greatly misled by these orthodox authorities as to the truth and value of Gall's researches ; with singular bad taste, they signalise their conversion by depreciatory nibblings at the fame of the great master, and by deprecating the supposition that the occurrence forms any ground for believing in the probability of his other discoveries.

As to the charge of "dogmatic teaching"—if a perpetual inculcation of the necessity of collecting facts, and a steady refusal to submit their doctrines to any other arbitrement—in short, a never ceasing, though ever fruitless, call upon their opponents to bring forward observations, in lieu of reasonings and assumptions—be evidence of dogmatic teaching, then Dr. Gall and his followers must plead guilty. But let us listen to the teaching of the accused, and hear the words of Gall, couched in the clear and forcible language, which so unmistakably tells the tale of energy of brain.

"Whoever is not impelled by an innate instinct of observation ; whoever finds it hard to sacrifice his opinions and the views he has derived from his earlier studies ; whoever thinks more of making his fortune, than of exploring the treasures of nature ; whoever is not fortified by inexhaustible patience, against the interpretations of envy, jealousy, hypocrisy, ignorance, apathy and indifference ; whoever thinks too highly of the force and correctness of his reasoning, to submit it to the test of experiments a thousand times repeated, will never do much towards perfecting the physiology of the brain."

This is Gall's dogmatism ; that of his accusers consists in doggedly refusing to take the direct road to knowledge he so clearly pointed out, and persistently confining themselves to suppositions, reasonings, and opinions, garnished with a few occasional flourishes on the "*true scientific method*," the preaching of which they appear to think a satisfactory substitute for its practice. The study of nature is evidently uncongenial to their minds, and, in lieu of observations, and the testimony of facts, instead of "I have seen," we get, "I entertain a strong persuasion,"—"from inquiries I have made,"—"the fact seems to be,"—"if I am not mistaken,"—"it would rather seem probable," &c., &c.

This is, no doubt, easier than collecting facts, by all the difference between talking and doing ; but, unfortunately, like the former, establishes nothing, but leaves the work still to be done. In short, the charge of dogmatism does not attach to those who record their observations of nature, and invite the co-operation of others, but to those who indolently, and arrogantly assume such observations to be erroneous, and treat them with ridicule and contempt. Dr. Hoppe, of Copenhagen, Mr. Crook, and Mr. George Combe, independently arrived

at the conclusion that the portion of brain lying under the zygomatic arch is the seat of the instinct to take food. During twenty years that I have observed the development of this portion of the brain, I have never seen a case where a great depression in this region was not accompanied with more or less weakness of the digestive functions, and I entertain no more doubt of the connection than I do of my own existence. How are we adequately to realize the intellectual torpor of a man in the daily practice of the medical profession, hearing the statement that such an important means of diagnosis exists, yet not taking sufficient interest in the question, to make a single observation to determine the truth, but apathetically resting in preference in the assurance, born of the prejudices of his teachers, that phrenology is all humbug? and who I ask are so responsible and so much to blame as the orthodox professors of Anatomy, Physiology, and Medicine, for the "inadequate appreciation" of Gall's discoveries by the existing generation?

Amongst other objections brought against Gall's discoveries by those who prefer theory and speculation to observation, it is argued that the organs are more numerous than is necessary, and that a smaller number of primitive faculties would suffice by their combination, to produce all the varieties of character we behold in man. I believe that just the reverse is the fact, and that analysis requires, and that observation will ultimately prove, that many require subdivision. To take the "organ of Love of Approbation," for example, shall we conclude that the same portion of grey matter originates the "desire of notoriety or distinction," and the "desire of pleasing"? I think not. Again, with regard to the functions of the "organ of Secretiveness"—I meet with some individuals who instinctively suppress the outward manifestation of the thoughts and emotions that arise in their minds, are habitually shy and reserved, and dislike even being looked at, who yet have no tendency actively to employ deception as a means to attain their ends. Other individuals, on the contrary, who have no shrinking from publicity, instinctively resort to deception as the readiest weapon to their hands in fighting the battle of life, and unless restrained by moral considerations, are profoundly treacherous, and lie from instinct. The first faculty is a defensive one, the latter an aggressive. According to my observations the former class are characterised by the large development of the portion of brain lying above Destructiveness, and now marked Secretiveness in the busts sold in this country; the latter by the prominence of the region immediately before Destructiveness, directly at the spot where the upper part of the front of the ear loses itself in the cheek.

No doubt much remains to be done, before we shall possess a strictly philosophical analysis and classification of all the primitive faculties, and their mutual relations, but this by no means lessens the truthfulness and value of the mass of facts and luminous deductions, for which we are indebted to the genius and industry of Gall. For instance, Gall's disciples know as surely as they know any fact in Natural History, that a portion of the anterior lobe lying on the roof of the orbit, is connected with the talent for philology, and that another portion, at the corners of the forehead, bestows the capacity for music, and such knowledge has a substantive value, although we are not able to define the exact boundary of the tract of neurine which, considered as a whole, has the function of cognising the peculiar qualities of sound appreciable by man,—as articulateness, timbre, pitch, and some others—or even to demonstrate what is doubtless the case, that the organ of articulate language, and that of music or pitch, are continuous with each other, and the rest.*

We see, however, that the general law, that the organs most indispensable to the well-being of the animal, are placed nearest the base of the brain and the mesial line, holds good with regard to the subdivisions of sound, and thus the more essential organ of articulate language is seated below, and within, the comparatively ornamental faculty of music.

It has never yet fallen to my lot to hear anyone declare, that after qualifying himself to judge of the development of the organs by the requisite study, the result of careful examination convinced him that there was no connection between the primitive faculties and the localities assigned to them by Gall; nor can I conceive such a result possible with a person of average intelligence and caution. As far as my experience goes, the reason assigned for disbelief, is invariably the authority of somebody else; some apocryphal tale, or the old threadbare stock objection so often refuted, and so intrinsically silly, of the frontal sinus, and the want of parallelism between the tables of the skull—an objection which, as it presents an exact parallelism in point of absurdity, with avowing a disbelief in astronomy, on account of the aberration of light, or the unavoidable errors in optical instruments, is quite unworthy of serious refutation. In short, it is perfectly clear and palpable that those who reject phrenology do not reject it on account of "insufficient evidence," because they do not examine the evidence already in existence. No! the real cause is the

* As far as my observations have gone, and the fact is worthy of note, in all great musical composers, Language, as well as Music, is large; indeed, the whole region of the corners of the forehead, including Order and Number, presents a development much above the average.

intellectual indolence and apathy which prevents their taking this step, and induces them to content themselves with *assuming* its falsehood.

Why, indeed, should those who are in the secrets of nature and able to pronounce *a priori* as to what is true, and what is ridiculous, have recourse to so troublesome and laborious a method of obtaining knowledge as observation?

No one who really desires to arrive at a definite conclusion as to the truth of Gall's discoveries, need remain in doubt from any difficulty in procuring the data necessary for forming a judgment. Evidence abounds, easily attainable, unlimited in amount, decisive in character. Setting aside the direct foundation and unassailable basis of his doctrines—the correspondence between energy of function and local development of brain—the beauty and harmony (so greatly beyond human ability to have devised), revealed in the arrangement of the organs, (more especially having regard to their gradual and isolated discovery), and also the irresistible confirmation of the accuracy of their localities afforded by “natural language,” are alone sufficient to stamp Gall's discoveries with truth, in the eyes of all those capable of appreciating the difficulty, or rather miracle, involved in the adoption of any other alternative.

Tests the most conclusive, from which everything dubious may be eliminated, are within the reach of all. Colour is one of the smallest of the organs of Gall, and the determination of its size presents far greater difficulty than that of the tenfold larger organs of the affective faculties, but it possesses the advantage that the nature of its function renders its manifestation little open to dispute. Every few years I find myself in presence of a new batch of hazy speculations on colour-blindness, in which this imperfection is attributed to some supposed defect in the eye, in utter ignorance of the fact that more than half-a-century before, Gall had clearly shown the defect to be cerebral, and pointed out its exact seat. As there are individuals colour-blind and incapable of distinguishing one colour from another, so, on the other hand, there are painters who excel in the harmonics of colour. Here we have a faculty easily discriminated, both in its positive and negative manifestations. Take the masks of half-a-dozen persons afflicted with colour-blindness, and half-a-dozen painters who excel as colourists, and mix them together, and any tolerable practical phrenologist would have no difficulty in separating the two classes. Now, when such things can be done—done even in the case of the smallest organs—and that they can is notorious, ridicule becomes ridiculous, and doubt, a sign of feebleness of mind.

Individuals to whom such facts do not carry the conviction of

logical sequence and connection, may be perfectly qualified to rank under Plato's definition "*animal implume bipes*," but they assuredly lack that nobler characteristic of the genus *Homo*, the gift of reason.

T. SYMES PRIDEAUX.

THE WEIGHT-PROPORTIONS OF THE BRAINS OF AUSTRIAN PEOPLES, WITH REFERENCE TO STATURE, AGE, SEX, AND DISEASES.

By Dr. A. WEISBACH.*

1. *Stature*.—Among the peoples examined in this respect (Magyars, Czechs, Italians, and Germans), there seemed to prevail a general law, that the cerebrum, compared to the whole brain (encephalon), diminishes with increasing stature; but that the occipital brain (and also the cerebellum alone) increases. As regards the absolute weight, it appeared that, generally, middle-sized persons possessed the heaviest, and short individuals the lightest, brains. But the Magyars formed an exception to this; as among them short individuals had the heaviest, and middle-sized persons had the lightest brain.

2. *Age* influences the brain in males and females in an inverse mode, in so far as the total weight is, between twenty and thirty, greatest, and then continually diminishes with advancing age, which decrease is divided in the separate cerebral sections, in such a manner that the cerebrum in males becomes, with advancing age, relatively larger, and the occipital brain smaller. In females (German), the total brain-weight is also, between twenty and thirty, greatest, after which time it steadily diminishes; but, with this difference from males, that in the former the cerebrum becomes, with advancing age, relatively smaller, the occipital brain (or the cerebellum and the pons alone) becomes relatively larger.

3. *According to Sex*.—In both nations examined in this respect, namely, Germans and Slavonians, it appears that the female brain is, on the whole, smaller than the male brain, but in the Germans the

* The above are the chief results arrived at by the author, and published in the second and third part of the *Archiv für Anthropologie*, under the title of "*Die Gewichts Verhältnisse der Gehirne Oesterreichischer Völker, mit Rücksicht auf Körpergrösse, alter, Geschlecht, und Krankheiten.*"

cerebrum is relatively larger, the occipital brain smaller; conversely, in the Slavonian females, the cerebrum is relatively smaller, and the occipital brain larger, than in the males of both; moreover, the Slavonian females possess, in comparison with the German females, a relatively smaller cerebrum and a larger occipital brain.

4. The influence of *disease* has been examined in Magyars, Italians, Germans, and Czechs, and it was found that, by chronic diseases, the total weight of the brain is diminished in the three first nations (but strikingly increased in the Czechs); which diminution, however, takes place in this mode,—that in the Magyars and Italians the cerebrum becomes relatively larger, and the occipital brain (or pons and cerebellum separately) becomes smaller; whilst, on the contrary, in the Germans and the Czechs, it is the cerebrum which becomes relatively smaller, and the occipital brain larger.

5. *Nationality*.—*a*. The Magyars have a middle-sized brain which, excepting that of the Rumani and Czechs, exceeds all others (that of the German by eight grammes). Their cerebrum is relatively, and with that of the Czechs also absolutely, the largest; their cerebellum is, however, excepting that of the South Slavonians, the absolutely, but amongst all, the relatively, smallest; their pons is of medium size, and the occipital brain altogether the relatively smallest of all.

b. The Rumani (Rumaenen).—After the Czechs, their total brain is the heaviest, about twelve grammes more than that of the Germans. The Rumani have a relatively smaller, but absolutely as large a cerebrum as the Magyars, the cerebrum is of middle size, and so is, on the whole, the occipital brain.

c. The Italians have, of all our peoples, the smallest encephalon, about 25·21 grammes less than the Rumani, a cerebrum of the least but relatively of middle size, excelling in this respect that of the Rumani. Their cerebellum is of less absolute but proportionally of middle weight (somewhat less than that of the Rumani), the pons Varolii is small, and, in relation to the cerebellum, considerably smaller than that of the Rumani; their occipital brain is, with that of the South Slavonians, absolutely the smallest, but relatively of medium size and but little less than that of the Rumani.

d. The Poles have an encephalon of medium size, intermediate between that of the Magyars and Germans. They have, along with a medium-sized cerebrum, a relatively small occipital brain, the cerebellum in proportion to the cerebrum, being, after that of the Magyars, the smallest; but the pons is, in every respect, after that of the Slovaks,—the largest.

e. The Ruthenes. The weight of the encephalon equals that of the Poles, being under that of the Czechs, but exceeding that of the

Slowaks and South Slavonians. The cerebrum also equals in weight that of the Poles, being relatively, however, a little less; but their cerebellum is somewhat larger than that of the Poles (by about 1.47 gramme); the pons is small, so that the occipital brain is somewhat larger than that of the Poles.

f. The Slowaks. The encephalon is of medium weight, greater than in the South Slavonians and Italians, but less than in others, approaching nearest to that of the Germans. Their cerebrum has of all the above nations, the relatively smallest weight; their occipital brain has the relatively greatest weight, which latter is only exceeded by that of Slavonian females, their cerebellum equals that of the Rumani and Germans, but is relatively larger than in all other nations, and their pons is absolutely and relatively the largest among all.

g. The Czechs are distinguished by their encephalon possessing the greatest weight; exceeding that of the Germans by 53.81 grammes, that of the Magyars by 45.45 grammes, and that of the Rumani by 54.33 grammes. Their cerebrum is also the absolutely largest, but compared with the whole brain only of medium size, but among the Slavonian people's the relatively largest. The weight of the cerebellum is also the absolutely largest, but in relation to other parts of the brain only moderately large, equalling that of the South-Slavonians. The pons is of medium size, and relatively small, so that the occipital brain on the whole has absolutely the greatest, but relatively only little weight.

h. The South-Slavonians. Their encephalon is of small weight, the smallest after that of the Italians. Their cerebrum is, however, in relation to the encephalon, of medium size, being in this respect only superior to the Magyars and Czechs. Their cerebellum is absolutely the smallest of all, but comparatively of medium size. Their pons is the smallest; hence the occipital brain is absolutely and relatively very small.

i. The Germans (males). Encephalon of medium size, exceeding only that of the Slowaks, South Slavonians, and Italians. Cerebrum relatively small, like that of the Rumani and the Slowaks; cerebellum, the largest after that of the Slowaks; pons of medium size, but smaller than in the Slowaks, Poles, and Magyars; the occipital brain is next to that of the Slowaks, the relatively largest among all males.

On comparing the peoples of the four families represented here, we find that the Slavonian family possess the largest encephalon, the Romanic the smallest, and that the intermediate Magyars possess a more weighty encephalon than the Germans, which are nearly equal to the Romanic stock. We find further that the cerebrum is relatively

largest in the Magyar stock, so that it is less in the Slavonian, still less in the Romanic, and least of all in the Germanic stock. On the other hand, the occipital brain, or the cerebellum alone, is largest in the German, less in the Romanic, still less in the Slavonian, and least in the Magyar stock. The pons is largest in the Magyar, and smallest in the Romanic stock; but has in the German a relatively greater weight than in the Slavonian family.

ARCHAIC ANTHROPOLOGY AT THE SOCIETY OF ANTIQUARIES.*

ANTHROPOLOGY, forming as it does a sort of central science, around which the other sciences cluster, contributes its aid to, and receives contributions in return from, the followers of all of them. No scientific society which really does its work can fail to have laid before it, in aid of its special objects, papers that are really anthropological. Such papers have the more interest, to the professed anthropologist, that they possess a certain local colouring.

These considerations lead us to draw attention to the more recent publications of the parent Society of Archaeologists, the Society of Antiquaries. To it Mr. Frere contributed, seventy years ago, his account of the Hoxne find, and it has been of late years a favourite depository for recitals of the discoveries of archaic anthropologists. We recognise it gladly as a society "which really does its work."—During the past few years, its affairs have been managed under very favourable circumstances, and every department, publications, library, and evening meetings, has been kept to a high point of efficiency. This has been due, we believe, to the possession of ample funds, a courteous and accomplished Director, and a zealous and indefatigable Secretary. Mr. Percival and Mr. Watson deserve a great deal of credit, and they will not object to acknowledge that they owe some of the success of their labours to the condition of financial ease, in which the Society has been placed by liberal bequests and benefactions.

The volume of *Archæologia* just completed contains only two papers belonging to the department of archaic anthropology. The first is

* *Archæologia*, vol. xli; *Proceedings of the Society of Antiquaries*, New Series, vol. iii.

Mr. W. M. Wylie's communication of a paper by Padre Gerrucci, on recent discoveries of sepulchral remains at Palestrina, the ancient Præneste. This excellent memoir is accompanied by eleven beautiful plates and several woodcuts, and describes the relics of an early Italic civilisation, in which not only iron, but ivory and amber, were plentiful. The other, by Mr. John Evans, on the stone implements discovered in Lough Neagh, Ireland, is illustrated by a coloured plate, representing several of the forms. These finds are interesting from the great number of objects, including simple flakes, amounting to many thousands, and from the variety of material employed, and they have attracted the attention of many observers.

Among papers not so strictly anthropological, may be mentioned another communication from Padre Gerrucci, through Mr. Wylie, on a very remarkable bronze object, conjectured to have been a votive offering to Faunus Lupercus; and a most learned and valuable paper by Dr. J. Barnard Davis, F.R.S., on Runic Calendars and Staffordshire Clogg Almanacks.

It is, however, rather in the brief notices contained in the "proceedings" of the Society, than in the more elaborate memoirs reserved for *Archæologia*, that we find evidence of the anthropological work it is doing. The completion of a volume of these records enables us to look back upon three sessions of the Society. During that period, it has had laid before it the discoveries of flint and stone implements in Kensington, Norfolk, Devon, Essex, Kent, Sussex, Aberdeen, Orkney, Paris, Pressigny, Dordogne, Denmark, Zealand, Nova Scotia, Jubbulpore, Burmah, Sumatra, and Prince Edward Island. It shared the interest which the Anthropological Society took in the remarkable discoveries of pile-dwellings and archaic skulls in the bed of the Thames made by Mr. Layton at Kew, and it entered with zeal into the question raised by Dr. Thurnam, as to the prevalence in long-barrows of a long type of skull. It welcomed also the periodical accounts which were received from its former Director, Mr. Franks, of the accessions, to the British Museum and the Christy collection, of objects of high antiquity. The rock markings at Sancreed, Cornwall, are figured and made the subject of a communication by Mr. Blight, and many other exhibitions of interest in this department were made from time to time.

That the Society did not, at the same time, neglect those questions which lie more closely within the scope of its ordinary work need hardly be said. The question of the Paston Letters, of Cæsar's landing, and of the Chapter-house at Westminster, will serve as types of the matters in which they have bestirred themselves with effect. We

cordially echo the tone of congratulation in which their President, Earl Stanhope, addressed them at a late anniversary, in allusion to the change of Directors :—"There has never yet been wanting a series of active, able, and learned men by whom the succession inherited from their predecessors in the Society is worthily upheld. Long may it continue to be so ! long may it be said of the Society of Antiquaries as of the winged commonwealth in classic times :—

*"At genus immortale manet, multosque per annos
Stat fortuna domûs, et avi numerantur avorum."*

Some few years ago the Society did not take that leading position respecting Archaic Anthropology, which it has since assumed. Until recently it devoted very few of its sittings to the discussion of these subjects, which are now somewhat absurdly denominated "Prehistoric Archaeology."

We hail with great satisfaction the leading position which the Society of Antiquaries has recently assumed in reference to all subjects relating to man's early history. This is as it should be ; all parties should unite in supporting such a course of action. It is advisable, that before persons write papers and books, on what they please to call Prehistoric, they should have some knowledge of what is Historic. A study of British, Saxon, and Roman antiquities is a better preparation for writing on Prehistoric Archaeology, than the opening some comparatively modern ruin, and describing the same as Prehistoric, or the representing mere naturally fractured stones or flints as works of art.

The Society of Antiquaries has shown itself both able and willing to discuss every topic relating to the great Science of Archaeology, and has never given undue prominence to the discussion of the speculations of the modern school of writers on Archaic Anthropology, calling themselves "Prehistoric Archaeologists."

DR. BASTIAN ON THE ETHNOGRAPHY OF CIVILISED PEOPLES.*

SINCE the appearance of the *Anthropology of Primitive Peoples*, by Professor Waitz, no book on that science has been published in Germany containing so extensive an apparatus of learning as Dr. Bastian's *Prolegomena*, and, if we say in Germany, we may as well say anywhere, the industry and patience of scientific writers in that country being unrivalled in any other. But these valuable qualities are unfortunately not always coupled with a corresponding degree of lucidity and grasp of thought, which we but too frequently look for in vain in the numerous contributions to science which we receive from our Teutonic cousins. So in this instance, a rich mine of intellectual wealth, a treasure of accumulated facts and careful observations comes to us in a form as unwieldy as it is unattractive. Why that should be so appears at the first glance quite unaccountable; however, a plea is put forward in the preface, which is supposed to explain, or extenuate, the offence. We decline to accept that plea.

Want of time, and want of space, can never excuse want of arrangement, and want of clearness; nor is it likely that the results of Dr. Bastian's studies will ever be proportionate to his labour and capacity, unless he brings them before the world in a more artistic shape. There are no chapters in this book, no paragraphs, no well marked sections of any kind; three hundred closely printed pages, but no indication whatever to guide us as to the relation in which they stand to each other! The thread of thought becomes continually broken through by copious foot-notes, relevant though they be to the subject under discussion. All this is rather unpleasant; still, he who will work his way patiently through this work, is not likely to regret it; there is in it solid proof, not only of the industry, but also of the philosophical mind of the author, and of his capability for the task he has set himself.

Darwinism is making even more rapid progress amongst German Anthropologists than amongst ourselves; Dr. Bastian looks upon his science (which he calls Ethnography, although Anthropology would be a more comprehensive term) from a thoroughly Darwinian stand-point; or we had perhaps better say he starts from the point to which Darwin,

* *Das Beständige in den Menschenrassen und die Spielweite ihrer Veränderlichkeit. Prolegomena zu einer Ethnologie der Culturvölker.* Von Dr. A. Bastian. Mit einer Karte von Prof. Kiepert, Berlin. Verlag von D. Reimer 1868.

De Candolle (*Géographie Botanique*), and Nathusius (*Rassen des Schweines*), have brought up the question of persistency of race characters, or characters of species.

It is only natural that many facts to which our attention is directed, many arguments which are brought forward in the course of the inquiry, appear to support the doctrine of Mr. Darwin; civilisation and its effects upon peoples cannot but show some phases bearing a resemblance to the symptoms observed in artificial breeding; so we meet (p. 49, *et seq.*) with some observations on this subject, which are well worth attention.

"Nothing more strongly characterises the profound confusion, says Dr. Bastian, and the utter want of all elementary principles in ethnography, than the prevailing opinion of the degenerating influence of mixture on race, whilst it is patent that wherever civilised peoples appear in history, they are but the highest product out of an infinite number of mixtures. Generally the primitive roots of their ethnological genesis go back to prehistoric times, which are far removed from our view; they (the roots) become known only by their effects when the race in the light of history has grown into a dominant nationality, but every scientific inquiry is at an end if we then want to consider such nationality as a *deus ex machina*, instead of analysing its organic genesis. We talk of purity of race; breeders consider it of the utmost value to retain the blood of their stock pure, and not to deteriorate it by mixture. So far, so good. But are therefore these thorough-bred races pure races, if by pure is understood primitive and aboriginal? Is the improved English short-horned breed of cattle the representative of the wild (feral?) species, or is it not rather a creature grown out of many, and most artificial crossings? In the race of Berkshire hogs, as it now exists, we find English, Tonquinesian, and Neapolitan elements, which compose this valuable breed, as has been proved by Nathusius. The English race-horse is certainly not the progeny of the wild horse of the Steppe or of the Pampas; on the contrary, it is produced by careful crossings out of Arab barbs, and English blood in order to provide it with the requisite qualities. The Arab horse also, will be, according to all probabilities, the product of crossings, its origin dating back into a prehistoric period, etc., etc."

It is not without interest to follow our author in the application to Ethnography of the arguments derived from a careful study of the aboriginal Fauna, and its present state of subserviency to man. The late Dr. Knox would be sadly puzzled by some of the facts brought to bear on the subject of races and anthropogenesis; his arbitrary classification of the human races, and his dogmatic assertions about human hybridity, are already superseded by profounder and more modern researches; in the volume before us we meet with a juster appreciation of the persistent characteristics of race, as well as of the modifying influence of surrounding circumstances. Dr. Bastian, and we believe

the best authorities with him, take a middle course, opposed alike to the eccentric teachings of Knox, and to the quiet ignoring of the importance of race in history, so fatal to Buckle's learned and eloquent, yet inconclusive, essay.

Our author follows some notable former writers on the subject, in arguing from an analogy between the elements and compounds in chymistry, on the one hand, and the pure and mixed races of animals, man included, on the other. The argument is very ably sustained, and it tells favourably on the Darwinian theory, although Dr. Bastian is by no means a mere advocate of that theory, or any other; all facts, whether apparently adverse or favourable, being fully brought forward and impartially considered. Towards the latter part of the book great prominence is given to archæological, mythological, and linguistic inquiries, showing an astounding amount of reading, as well as original research and travel. The information on those points is very complete, and we approach thereby the question of race from another road that may yet open up vistas hitherto little thought of. The light, which by recent investigations is shed on the intercourse between the Icelandic discoveries of Finland and the aborigines of Northern and Central America, is likely to demolish many theories boldly advanced, many notions still tenaciously defended about the Aztecs, Mexican architecture, inscriptions, etc., etc. We recommend this part of the book to the students of comparative Mythology and Philology; they will find in it more than they look for.

A map, which is drawn up with the assistance of Professor Kiepert, forms a very valuable and welcome addition to this little volume. It shows, in varying colours, the areas occupied towards the end of the fifteenth century by different races and nationalities of the world; a reproduction of this map on an enlarged scale is a desideratum for all Anthropologists, who are often in want of such a guide on a complicated and difficult subject.

ON THE LOCALISATION OF THE FUNCTIONS OF THE
BRAIN, WITH SPECIAL REFERENCE TO THE
FACULTY OF LANGUAGE.

By JAMES HUNT, PH.D., F.S.A.

(*Historical part continued from p. 345, vol. vi.*)

AMONG the writers of the sixteenth century we meet with an anthropologist, who deserves even more space in these pages than we can here afford him. We allude to Juan Huarte, the author of that re-

markable work entitled *An Examination of Geniuses for the Sciences, showing the difference of aptitudes among men, and what sort of learning would suit best each genius*.*

Huarte certainly was not a scientific anatomist, in the present acceptance of the term; but he was a man of great erudition, an original and bold thinker, a keen observer, and not merely a speculative but a practical philosopher. It is not our intention to give here a complete analysis of the work in question; we shall merely give such extracts as will show that Huarte was one of the first who forcibly pointed out the intimate connexion of mental phenomena and the body, and boldly and distinctly proclaimed the brain to be the organ of thought. When we take into consideration the century and the country in which Huarte wrote, we marvel at the boldness of the man who, with the eyes of the Spanish Inquisition upon him, dared to evolve even the character of Christ from the spurious description of his physical organisation, attributed to P. Lentulus, the proconsul of Jerusalem. To show at once "what manner of man" we have before us, we extract from the work a passage on authors and scholars, whom the author compares to sheep and goats, evidently ranging himself among the latter.

"The goat does not like the plain, but prefers rocks and hills, which it climbs, and looks down into the abyss; it leaves the herd and the trodden path. The rational soul, dwelling in a well-organised and tempered brain, possesses the same qualities; it proceeds onward to discover new things. On the other hand, there are people who do not imagine that there is anything more to be discovered in the world. They have the character of sheep, which never leave the herd nor the trodden path. Amongst scholars, some are bold, and care little about received opinions; they do everything in their own way, speak their thoughts freely, and are their own guides. The others are timid, humble; they swear by the words of some great authorities; they follow them, and deem their opinions as incontrovertible truths, which alone deserve faith; whilst they hold what others say to be whims and lies. These two kinds of geniuses are, taken together, very useful. For as shepherds generally put to a great flock of sheep about a dozen goats, to render the former lively, and show them the way to new pastures; so must there be, in human sciences, some inventive minds, which show to the sheep new wonders of the creation. It is in this way that science is developed, and in this way the knowledge of man increases daily."

One of the leading ideas, which pervades the whole work, is that man is just what nature made him; that, therefore, we must study the nature of each man to learn what he is fit for. If you send a brute

* "Examen de ingenios para la Sciencias, donde se muestra la diferencia de habilidades que hay en hombres y el genero de letras que a cada uno responde en particular." Pampluna, 1578.

to Rome, a brute will return; or as he has it, *Quien bestia va á Roma bestia torna*: "it will as little avail him to go to Salamanca, if he brings no intellect with him". Huarte, therefore, in his dedication to the king of Spain, proposes,—

"That the universities should examine whether those who present themselves to study logic, philosophy, divinity, law, etc., possess the requisite aptitudes for either of these sciences; otherwise, apart from the injury that such a one may afterwards do to the commonwealth by practising an art wherein he is not skilled, it is melancholy to see a man take pains and rack his brains about a matter whereof he cannot reap any advantage."

Another leading idea is that the mental operations of man depend on the condition of his corporeal frame. "It is," as he observes, "against all natural philosophy, to believe that the rational soul, being in the body, can operate without the mediation of her corporeal instrument." He rejects the theory of ancient philosophers, that the heart is the chief seat of the soul. "It is true," he adds, "that in many passages of the sacred scriptures, the heart is styled the superior part of man; but this is merely an accommodation to the way of speaking in use at the time. Experience and reason have proved that the brain, and not the heart, is the chief seat of the rational soul." In accordance with this opinion, he observes:—

"When God formed Adam and Eve, it is certain that before he filled them with wisdom, he instrumentalised their brain in such a manner that they might receive it with ease, and serve as a proper instrument, therewith to be able to discourse and to reason."

Although Eve was made by God as perfect as any of her sex can be, yet is it an undoubted fact that woman is inferior in intellect to man. The cause evidently is that the composition and temper of her brain are differently disposed.

In chapter i, he proves, by an example, that if a child have not the disposition which is requisite for a certain science, the best school-master will lose his labour. We almost fancy we read the biography of Gall in the following passage:—

"I am myself a good witness to this truth. There were three companions of us, who entered together to study Latin. One of us learned it with great facility, the rest could never make any commendable composition; but passing on to logic, the one who could not learn grammar, excelled in that art. Then all three coming to hear astronomy, it was a matter worthy of note, that he who could learn neither logic nor grammar knew, in a few days, more astronomy than the master who taught him. I then greatly marvelled thereat, and found that every science required a special and particular aptitude."

Assuming thus that nature alone makes man able to learn, he inquires (chap. iii):—

"What part of the body ought to be well tempered, that a young man may have ability. No one doubts," he says, "that the brain is the instrument ordained by nature to the end that man might become wise and skilful. Four conditions ought the brain to enjoy, that the rational soul may perform the works which appertain to understanding and wisdom. 1. Good composition; 2. that the parts be well conjoined; 3. that the heat exceed not the cold, nor the moist the dry; 4. that this substance be made of parts subtile and delicate. The brain should be well formed, and of sufficient quantity. The four ventricles should be distinct and severed, each in its proper place, and of appropriate capacity."

"Galen," he continues, "infers the good figure of the brain from the outward shape of the head, which," he says, "ought to be such as it would be when we take a round ball of wax and compress it a little on the sides. The forehead and occiput will then present projections. Hence, it follows that the man who has his forehead very plain, and the back of his head very flat, has not his brain so figured as is requisite for wit and ability."

Speaking of the quantity of brain, he observes: that none of the brutes have as much brain as man; and that animals approaching man in wisdom and discretion (dog, ape, fox), have a greater quantity of brain than other animals with larger bodies. Galen says, that a little head in a man is ever faulty, because it is deficient in brain. This, says Huarte, is not always the case. A big head affords no positive proof of a large brain, as the size may be owing to the thickness of the bones and the quantity of flesh; in the same way as we find big oranges with such hard and thick skins, that they contain but little juice.

The soul, in order to produce different effects, must act by special instruments. This is shown by the different structure of the external organs of sense; we may hence conclude as to the internal senses. If, then, it be true, that every kind of work requires a special instrument, it necessarily follows that within the brain there must be one organ for the understanding, one for the imagination, and another, different from them, for memory; for if all the brain were organised after the same manner, either the whole would be memory, or the whole understanding, or the whole imagination. But we see that these are very different operations, and therefore it is clear that there must be a variety of instruments.

But, when we open the skull, we shall find the whole composed of the same substance, only there appear four little cavities. Galen and other anatomists have endeavoured to find out the truth, but none of them have precisely stated the function of either of these ventricles. They only affirm that they are workshops (which some doubt) where the vital spirits are digested and converted into animal spirits, to give sensation and motion to other parts of the body.

Huarte dissents from this theory, and thinks that the fourth ventricle alone has the office of digesting and altering the vital spirits ; for which reason nature has severed it, and placed it at a distance from the others, and made that part of the brain a separate portion.

He doubts not that the three ventricles placed in the forepart are intended by nature to no other end than to discourse and philosophise, which is apparently proved by the fact that in severe study and contemplation it is always this part of the head that is aggrieved.

But the difficulty is to know in which of these ventricles is seated memory, or imagination, or understanding. He comes to the conclusion that, in as much as the understanding cannot act without memory, nor memory without imagination, all these powers reside in each ventricle. But, if so, it may be asked to what end has nature made several ventricles, as one would suffice for the performance of all. He answers, for the same reason that nature has made two eyes, and two ears, so that when one fails the other may act. Thus, in palsy, the action of one ventricle may be lost, and yet memory, understanding, and imagination, though weaker than before, may remain, which clearly shows that these faculties reside in each ventricle.

In chapter iv he shows that when the brain becomes heated, a man may become eloquent and wise. Among other cases he cites that of a rude country fellow, who, becoming frantic, made a very eloquent discourse in his presence, with so many flowers of rhetoric, and such apt choice of words, as if Cicero had spoken in the presence of the Senate. This person, when in health, had nothing to say.

But this, he adds, is nothing compared to the case of a page in the service of a grandee, who, whilst he was mad, delivered such rare conceits, and devised such excellent modes of governing the kingdom, of which he imagined himself to be the sovereign, that his master rarely left his bed, and prayed God not to restore him to health. It seems, however, that the page was cured by a physician, who, when he claimed his fees from the master, received the following answer: "I was never more aggrieved ; of one who was wise and well advised you have made a fool again." Nor did the good doctor fare better when he applied to his former patient, who also deplored that he had been cured.*

On the intellectual faculties Huarte observes as follows: Memory and understanding are faculties essentially different. Memory is only

* This anecdote has given rise to a ludicrous mistake on the part of D. Seligman. In his *Sciagraphia Virium Imaginationis*, he writes, Huartus, Hispanus, se regem in delirio arbitratus prudentissimos de regimine faciebat discursus: Huartus is thus considered to have been mad himself, whilst he only cites the above case. Willis (see *infra*) also quotes the case incorrectly.

a passive faculty, depending on certain qualities of the brain, such as moisture and softness, which render the brain fit to receive what the imagination, by means of the senses, has perceived. Memory is to the imagination what white paper is to the writer. What is contemplated by the imagination with attention, is deeply impressed upon the memory, what is only superficially viewed is easily forgotten. In the same way as a writer, who carefully delineates his letters, renders his writing legible, so the imagination, in order that each image should long and legibly remain in the brain, must carefully impress it in the brain, otherwise, the image will be scarcely perceptible; as happens in old manuscripts, in which some parts are obliterated by time, and others are distinct. In the same way, some images may remain in the memory, whilst others are effaced. Memory and understanding are not merely different, but opposed faculties. The understanding requires a dry brain, the memory a soft and moist brain. Young persons have a good memory on account of the softness and moisture of their brain. In old age the brain substance becomes so hard as to be incapable of receiving impression. Hence young people are deficient in understanding, in which old persons excel, for the understanding requires a dry brain. Women, like children, having softer brains, are inferior in understanding to man. He even goes so far as to assert that men possessing a prodigious memory, are deficient in understanding, and *vice versa*. There is also in this work a curious chapter on the mode of begetting strong, wise, and virtuous children, male or female, which we do not think it necessary to touch upon.*

Huarte's work naturally provoked much criticism. To those of his contemporaries, who complained that they had in vain sought in his book for the chapter which was to reveal to them their aptitudes, he simply replied, that he was not obliged to give wit to those to whom

* Juan de dios Huarte, Navarro, was, as he tells us himself (natural de San Juan de pie del Puerto) born about 1525, at St. Jean-Pied de Port, a little town in Navarre, then belonging to Spain. Nothing certain is known about the year of his death. He studied medicine at Huesca, in Aragonia, then a flourishing university; he probably, also, attended lectures at Salamanca and Alcalá. He then seems to have settled at Huesca, where he died, about the end of the sixteenth century. Some say that he died in Madrid. Huarte appears to have finished his work in 1557, but only published it in 1575. The earliest edition we have seen is that of 1578. The work soon created a great sensation in the literary and scientific world, and was translated into most European languages. In Germany it became known by the name *Scrutinium Ingeniorum*, a Latin translation, by Æschasius Major (Joachim Caesar), Leipzig, 1612. In English, there are two translations, one by Carew, *The Examination of Men's Wits*, etc., London, 1616, and another by Bellamy, *The Tryal of Wits*, etc., 1698. Several translations appeared in France. The earliest translation we know of is that by Camilli, Venet., 1586, from which Carew made his translation. Finally, Lessing translated the work into German in 1752, and gave it the title *Prüfung der Köpfe* (an Examination of Heads).

God and nature refused it. There is, however, one critic we must mention who wrote a formal refutation of Huarte, in the shape of a book double the size of Huarte's work. This book is entitled, *An Examination of the Examination of Geniuses*, by Jourdain Guibelet, physician to the King. It is not our purpose to enter into the merits of this refutation. Certain it is that Guibelet is far inferior to Huarte in originality of thoughts, and power of expression. He belongs, in fact, to the second class of authors described by Huarte. Guibelet is now almost entirely forgotten; his name being scarcely mentioned in any biographical dictionary, nor his book cited in bibliographical works. It is for this very reason that we would rescue from entire oblivion one chapter, at least, of this scarce work, partly because we think it deserves preservation from its intrinsic interest, and partly because it forms what the author intended it should, a supplement to Huarte. The following is the substance of the last chapter of Guibelet's work,* headed, *By what Signs the Character of Children may be known*. This ought to have been the main object of Huarte's book, but, as he neglected it, or has only slightly touched upon it, Guibelet says, that he would try to give a few rules on account of the importance of the subject.

There is such intimate connection between the soul and its organ the body, that we are able to judge of the mental capacity of children by their face, which has been called the mirror of the soul, and by other parts of the body, when the children are about seven or eight years old. The chief marks, touching the minds of children, are to be found about the head. As the brain is the seat of the faculties, it is reasonable to suppose that *the external head should show what is going on within*, just as the dial outwardly represents what is hidden. We must, therefore, first examine this part and see whether the child has a well formed head. . . . The head should show some eminence in front and behind; because of the ventricles of the brain, in which are seated the *sensus communis*, imagination, and memory. The top of the head should be slightly depressed in the region of the sutures. . . . The hair should be smooth, neither too stiff, nor too black; the face should be rather thin, neither too fleshy, nor too fat; the complexion should be a mixture of white and red. He then proceeds to the conformation of the eyes, "the two windows of the soul," as he calls them. They should be neither too large nor too small, nor too deep seated; they should be bright. The chief characters of a sound mind, he continues, are clearly marked in the face between the eyes, which shine like brilliant stars; the eyes should be azure or sky-coloured.

* *Examen de l'Examen des Esprits*. Par Jourdain Guibelet, M.D., Médecin du Roy à Evreux. Paris, 1631.

The space between the eyes should be a little depressed, rather than raised; Straton thought that there was the seat of the soul. The forehead and the hand are two parts of the body in which are depicted all the powers of the mind. A large and square head, proportioned to the size of the face, shows the force of the faculties, it is a mark of a large brain, and a sign of good sense, and a sound mind.

God has put some marks in the hand, so that each may know what he can do. But all this is not for children, but for grown up men who have a face lean from study, *vultum exercitatum*, as Petronius says, and hands skilled for all kind of work. Guibet very judiciously adds, it is also from the actions and deportment of children that we can conjecture what they will be. Those who think slowly, but still show vivacity of mind when something interests them, are generally intelligent. This tardiness, age and study will remove, and they will then show what is now hidden. There are some children with vivid minds, ready to say everything, and to do everything. They cause pleasure to the parents, but it is a straw-fire which soon becomes extinct.

It is noteworthy what Fracastor says, that those who have great memory for localities and roads, approach the nature of brutes. The teacher may also by frequently questioning his pupils judge of the state of their intellect.

Michael Servetus, of Villanuova, in Arragonia, born 1509, the discoverer of the circulation of the blood through the lungs, burnt at Geneva as an heretic in 1553, at the instigation of Calvin, must also be mentioned as a localiser of the cerebral functions. He believed that the choroid plexus was the organ destined to secrete the animal spirits; that the true seat of the soul was in the aqueduct of Sylvius; that the two anterior ventricles were destined to receive the images of external objects, and that the fourth ventricle was the seat of memory.*

As will be seen, there is scarcely any part of the encephalon which has not alternately been looked upon as the palace of the soul; none, however, has acquired such a celebrity as the pineal gland, the spot selected by the great reformer of Philosophy, the opponent of Aristotle, namely, Renatus Cartesius (René Descartes, born 1596, died 1650). The chief reasons Descartes gives for assuming that the *glandula pinealis* is the seat of the soul, are the following.† Although the soul is immanent in the whole body, there must be a certain part in which it more specially exercises its functions. This part is not the whole brain, but the pineal gland, which is situated in the middle of the cerebral substance, above the canal through which the spirits of the anterior ventricles communicate with the spirits of the posterior

* *Restitut. Christian.*, lib. v. Vienna, 1553.

† Descartes, *Passiones Animæ*. Amstel., 1664, art. 31, 32, 34.

cavity, so that the slightest motion of that body may change the current of the spirits, whilst the slightest change in the spirits may affect the motions of the pineal glands. We need scarcely add, that the pineal gland is, at present, left entirely untenanted, as regards any intellectual function.

Physiognomy and Cephalonomy are so intimately blended, that we must not pass over two authors of this period, the chief representatives of the above doctrines. The first we shall quote from is *Marian Cureau de la Chambre* (born 1594, died 1669), physician to Louis XIV, and one of the first members of the then newly founded French Academy. Tinged as the works of these writers are with baseless hypotheses, paradoxes, and astrological superstitions, they still deserve the attention of the Physio-anthropologist. The two chief works of de la Chambre are his treatises *On the Art of Knowing Men*,* and *The Character of the Passions*; he was also the author of numerous other works.

The subjoined extracts are from the chapters on the principles of Metoposcopia, in the work *On the Art of Knowing Men*. "The forehead is unquestionably that part of the face which Metoposcopy is most occupied with. The signs are there in great number, and more diversified than anywhere else; hence Metoposcopy derives its name from this spot. When we inspect this confined space, which naturally should be smooth and equal, and yet which presents such a variety of irregular lines, some of which vanish and give rise to others; when we find that some are deeper, others more superficial, some short, others long; that they are not to be found in the same number, or of the same colour alike in two persons; then, I say, that we have reason to believe that there is some secret hidden in man's forehead, unknown to man, and that the impressions upon his forehead are due to nobler and higher causes than the lines we find on the foreheads of animals. It might be said that the consistence of the skin is the cause of this diversity, and in proportion as it is thicker or more supple, the lines are more or less easily formed; but do we not see a vast number of persons whose skin is of the same consistence, yet who have not one line alike? He admits that movement and dryness may contribute to form these lines; but he contends that these lines on the forehead exist already at birth, although they are not then perceptible. We must then attribute the first impression of these lines to a cause outside the body, and as there are incontrovertible proofs that certain planets govern certain parts, so must we conclude that the lines on the forehead are of this order, and they are imprinted

* *L'Art de connoistre les Hommes*. Paris, 1663. *Les Caractères des Passions*, 1658.

by one of these planets. In his opinion, it is probable that the forehead is governed only by one planet, namely, Saturn. We may only add that he considers the nose is governed by Venus, and the lips by Mercury.

The normally greater strength of the right side of the body, a subject which will be again adverted to in the sequel, is thus accounted for by our author. The hands are the chief instruments used by the mind to perfect its inventions, and, no doubt, they give such an advantage to man, that if we cannot say with the ancient philosophers, that man is wise because he possesses hands, we may at least assert that he appears wise because of his hands. Nature has placed them as much as possible near the seat of reason, and the senses with which they are so nearly connected. The right hand is the first in dignity, being more agile and stronger than the left. It is stronger because it has more heat, and it has more heat, not merely because it is on the same side as the right ventricle of the heart, where the blood is hotter and more boiling; not merely because the liver, the source of blood, is nearer to it; not merely because the veins of the right side are, as Hippocrates says, more ample, but also because it is placed on the right side, where all movements should commence. That all movement commences naturally on the right side, is a truth which cannot be contested, when we observe what is going on in animals. Thus, quadrupeds always commence moving with the right forefoot; and bipeds also always put the right foot foremost. We carry burdens better on the left shoulder, so as to leave the movement of the right foot free.

The second, indeed the most prominent representative of Cephalonomy and Physiognomy of the seventeenth century, is an Englishman, namely, Richard Saunders, the very prototype of Gall and Lavater. Many of the axioms laid down in this singular and scarce work,* from which we take the subjoined extracts, will be found closely resembling the fundamental principles as laid down in modern phrenological works, as the following passages will abundantly show.

"Now, in our science of Physiognomie, the form, the proportion, and dimensions of the head are to be considered; for by it, and its form, we judge of the mind contained therein.

"A little head is never without vice, and most commonly, is guilty of little wisdom, but rather full of folly, which is naught and malicious.

"The best form of a head is moderate, as greatness and thickness, and of a decent and convenient roundness, which, before and behind, is tempered with a little depression. . . .

* *Physiognomie, Chiromancie, Metoscopia*, etc. By Richard Saunders, Student in the Divine and Celestial Sciences. London, 1653.

"The brain, one of the noblest parts of the body, is according to the form of the cranium ; for if the cranium be corrupted, the brain is so too. The head of man has proportionately more brains than all other living creatures ; and men have more brains than women ; and the head of man has more joynts than any other creature. So the well-formed head is like a mallet, or sphear, there being some eminence before and behinde ; the form of the middle ventricle should be a little compressed, so the cogitative faculty is the more notable. If the forepart be depressed, the man is of no judgment : if the hinder, he has no memory. . . . When the head is big, proportionately to the body, the sinews of the neck big, and the neck itself strong, it is a sign of strength, choler, magnanimity, and a martial humour. . . . A head having the middle ventricle somewhat compressed towards the side, denotes the cogitative faculty, natural diligently comprehensive, ratiōative, and eloquent, which proceeds from the union of the spirits that are in that place ; those who have a head thus are learned and knowing. The head, very little, is necessarily an evil sign ; and the less it is, the more folly there is."^{*}

In chapter eight, which treats of Metoposcopy or the signification of the forehead, the author illustrates his views by fifty woodcuts of heads, in which the lines on the forehead and its form betray the disposition of the individual, "according to the most accurate and exact observation, which being as an epitomy of the whole doctrine, may delight the reader." Some lines denote the character of a simple honest person, others denote a murderer, a thief, a prattling loquacious person, cowardice or courage, meekness and impudence.

At this period general human anatomy was already comparatively in an advanced state ; but the anatomy and physiology of the brain and nerves was still vague and meagre in the extreme. There can be no doubt that Thomas Willis occupied the foremost rank in the seventeenth century as a cephalotomist and neurologist. His great work "On the Anatomy of the Brain and the description and use of the Nerves,"[†] although published more than two centuries ago, forms still the foundation of modern neurology. Willis was the first who perceived the great advantage of comparing the human brain with the animal brain, and he arrives at the conclusion now generally admitted—that man's intellectual superiority was greatly owing to the depth and extent of the cerebral convolutions. He attached great importance to the grey substance as generating the force of which the medullary matter is the distributor. This is not the place to enter into his great merit of having introduced a new method or, at all events, a uniform method

^{*} Part II, chap. vii, p. 158, *et seq.*

[†] *Cerebri Anatomie ; cui accessit nervorum descriptio.* London, 1664.

of dissecting the brain, which before him was performed downwards and upwards and in different directions; nor shall we say any thing about his tracing the origin of the cranial nerves, and their classification, by which he introduced order where till then the greatest confusion obtained. What concerns us here is this, that Willis considered not only the brain as the organ of the rational soul, as the origin and source of all conceptions, but that he assigned to different parts of the brain different physical and mental functions.

In his Preface to the Reader, after stating that he felt ashamed of having drawn out for himself and his auditors a kind of poetical philosophy and physics consisting of conjectures, he came to the determination not any longer to pin his facts on the received opinions of others, nor on the guesses of his own mind, but for the future to believe nature and ocular demonstration. He consequently, as he states, addicted himself specially to the opening of heads and to inquiring into the offices and uses of the brain and its nervous appendages. The first sentence of chapter i, "On the method of dissecting the brain" is characteristic; it runs thus: "Among the various parts of an animal body subject to anatomical inquisition, none is presumed to be easier and better known than the brain; and yet there is none less or more imperfectly understood." The importance which he attached to the comparative anatomy of the brain is shown in the following passage: "That the perfect knowledge of the brain may be gained, it is necessary not only to dissect men's heads but those of all other kinds of living creatures In doing so I shall shew the communities and differences which the parts in question obtain in various animals, compared among themselves and with man. From such a comparative anatomy not only the faculties and uses of every organ, but the impressing influences and secret workings of the sensitive soul will be discovered."

Chap. x. *A description of the Brain and the use of its parts*:—"The brain is accounted the chief seat of the rational soul in man, and of the sensitive in brute beasts; it is the chief mover in the animal machine and the origin and fountain of all motions and conceptions. *Convolution*.—In the more perfect animals all the turnings are made of a twofold substance, viz. cortical and medullary; the animal spirits are wholly, or for the most part, generated in the cortical substance, the medullary part serves for their dispensation. The anfractuous brain, like a plot of ground planted with nooks and corners and danks and molehills, has a far more ample extension than if its superficies were plain and smooth. These folds are larger and far more numerous in man than in any other living creature for the various and manifold actings of the superior faculties."

Willis rejects the theory of the ancients that the animal spirits are

elaborated in the ventricles, or that the supreme seat of the soul is fixed there. He also rejects the theory that the pineal gland is the seat of the soul, or that its chief faculties arise from it, on the ground, "because animals which are almost destitute of the superior powers of the soul, have the glandula large and fair enough." (Chap. xiv; *Anat. of the Brain*.) The sensations he places in the corpora striata; these sensations are represented upon the corpus callosum, as it were upon a white wall, and so induce a perception and a certain imagination of the thing felt. These images, further progressing from the corpus callosum to the cortex and entering its folds, constitute the memory (chap. iv, *On the Soul of Brutes*). As regards motion, Willis considers that the cerebrum presides over voluntary, and the cerebellum over involuntary movements. In a chapter on stupidity Willis remarks:—"It is a common observation that wit and ingenuity depend somewhat on the magnitude and figure of the head, and consequently of the brain. The genuine and best figure of the head ought to be globular; those who have a flat head, or otherwise unproportionate, are for the most part affected with some noted faults of the animal functions, for these kinds of brains, like distorted looking-glasses, do not rightly collect the images of the things nor truly object them to the rational soul. A fever sometimes cures fools and renders them acute. Huarte tells us of a certain man that was a fool at the court of Corduba, who becoming distempered with a malignant fever, came so much to himself that in the midst of disease he spoke with such judgment and discretion that the whole court stood in admiration, and so remained his whole life afterwards one of the most prudent men of his time."

As we cannot believe that Willis embellished this story, we must presume that he took it second hand. He, however, makes an addition of his own experience which is worth recording:—"We ourselves," continues Willis, "have known a certain man of a very blunt Bœotic dull wit, who talks idly, but in fever suddenly brought forth most acute speeches, and seasoned with a great deal of salt and wit. Further we knew a generous old gentleman who, having lost his memory and so the use of discourse, received great help by the distemper of fever happening afterwards."

The great Haller (1708-77*) has also briefly discussed the question of the seat of the soul, for in chapter eleven of his work, *First Lines of Physiology*, he asks, "Is there in the brain any principal part in which resides the origin of all motion, the end of all sensations, and where the soul has its seat? Is it in the corpus callosum?" He comes to the

* *Primæ Linæ Physiologiæ*. Gotting., 1751. *Elementa Physiologiæ corporis humani*. Lausanne, 1757-66.

conclusion that it is not, and that this opinion is opposed by very many facts: birds have no corpus callosum, and wounds in that body are not in the least more mortal than those in other parts of the brain, as appears from undoubted experiments.

Concerning the seat of the soul, he adds, "We must inquire experimentally. In the first place, it must be in the head, and not in the spinal cord. Again, as it appears from the experiment of convulsions arising when the inmost parts of the brain are irritated, that it lies not in the cortex but in the medulla, and, by a probable conjecture, in the crura of the medulla, the corpora striata, thalami, pons, medulla oblongata. Again, by another not absurd conjecture, where the origin of every nerve lies, as the first origins of all the nerves taken together make up the sensorium commune. Are the sensations of the mind represented here, or do the voluntary and necessary motions arise in that place? This seems very probable; elsewhere he denotes the pons as the probable sensorium commune.

The next author who in chronological order claims our attention with reference to the localisation-theory, is Charles Bonnet (born 1720, died 1793). This celebrated philosophical naturalist starts, like Aristotle and Locke, from the principle that our ideas are derived from the senses; that all the manifestations of our physical life are merely the phenomena of nervous and cerebral action, and that the main object of philosophy consists in the observation of the laws of relation between the function of the central organ of sensation and mental phenomena. It must not, however, be inferred, that Bonnet was a pure sensualist, or materialist. On the contrary, he believed in the continuance of the thinking principle after death, and wrote an apology of Christianity,* which has been translated into most European languages, and was so much admired by Lavater, that he forthwith translated it into German, and challenged Mendelssohn either to refute the arguments, or to embrace Christianity. Bonnet must in so far be considered as an organologist, in as much as he considers not only the brain to be an aggregation of numerous faculties, but assigns special functions to each fibre. Every faculty, sensitive, moral, or intellectual, is in the brain connected to a bundle of fibres. Every faculty has its laws, which subordinate it to other faculties, and determine its mode of action; and not only has every faculty its fasciculus of fibres, but every word has its own fibre.

I feel the more induced to give some lengthy extracts from two of this author's noted works,† because that apart from their intrinsic

* *Recherches Philosophiques sur les preuves du Christianisme*. Genève, 1770.

† *La Palingénésie Philosophique*. Genève, 1769. *Essai Analytique sur les facultés de l'âme*. Genève, 1770.

interest, they bear, as will be seen in the sequel, upon the question of loss of articulate speech, in relation to the intellectual faculties. It will also be found that the theory, propounded by an eminent anthropologist and cephalotomist recently deceased (M. Gratiolet) is here anticipated.

Specific Differences of Sensitive Fibres.—Every sense has its own mechanism. Every sense transmits to the soul a multitude of different impressions, followed by as many different sensations. . . .

Imagination and Memory.—The ideas which objects excite in the mind may be reproduced by imagination and memory. Before searching how an idea may be reproduced, we must know how it is produced.

The Mechanism of Memory.—In order to elucidate a little the mechanism of this wonderful faculty, says Bonnet, he had studied the art we are to impress upon our brain, a sequence of sounds, words, a discourse, and he found that this art, so well-known by public speakers, has for its final object to set the sensitive fibres into a motion corresponding to the order of the sequence of words, to which they are appropriated. These fibres intercommunicate with one another, and may acquire an *habitual* disposition to set each other into motion in a determined and constant order. It is therefore by the repetition of the same movements, in the *same direction*, that we succeed in making these fibres contract this position.

Attention, which adds new force to their movement, aids in fixing the sequence of words on the memory. This sequence is then represented in the brain by a chain of fibres and fibrils, along which the movement is propagated in order, the more constant as the memory is tenacious. Memory is attached to the body, since causes which only affect the body, enfeeble the memory, or destroy it; or may be, fortify it. How many facts in medicine have not established this truth? How many diseases have not been followed by the weakening, or loss of memory? How many accidents have not modified this faculty, or given it more force? The ideas being in their first origin only the movements, impressed by the objects to the sensitive fibres, it follows that the conservation of the ideas by memory, depends on the disposition which the sensitive fibres have acquired to repeat these movements.* I call the *primitive* or *original state* of the sensitive fibres, that which precedes the time when the objects begin to act upon these fibres. The action of objects upon the sensitive fibres, changes to a certain point the *primitive* condition of these fibres, since it imparts to them dispositions they had not before. By dispositions, I always understand determining to certain movements. The capa-

* *Essai Analytique sur l'âme.*

city of receiving these determinations, or to express it in a single word, the *mutability* of the fibres lies in their structure. A simple fibre is composed of *molecules*, or *elementary* parts, the form, or the arrangement of which determines the species, or the action of the fibre. If the elementary molecules of the fibres were absolutely incapable of change, the fibres would be rigid, and the objects could make no impression upon them. If the effect which the impression of the objects produce on the fibres were absolutely momentaneous, the impression would not be durable, and there would be no memory. The action of objects upon the fibres *modifies* the original form of their molecules, or changes their *respective* positions. We know nothing of the force which tends to maintain the fibres in their actual condition; we only know that it exists. Memory requires a certain time to lay hold of objects; this leads to the supposition that there is a resistance to overcome. The phenomena of memory belong to the brain, and the recall of an idea is the reproduction of the movements to which this idea was attached. Every movement involves a change in the body moved. The condition of the brain changes when any object acts upon it. A necessary consequence of this change is that which follows in the state of the mind, and which we express by the names, sensation, perception, idea, &c.

Extinction of Reminiscences.—The sensitive fibres have been so constructed, that they give to the nourishing particles an arrangement relative to the dispositions they have received; but if, by some foregoing impulse, this arrangement is disturbed, the nourishing particles cannot place themselves with the same regularity, and are no longer in a position for the preservation of *reminiscences*, and the impressions become effaced. Finally, when with the lapse of time, there remain no fibres nor molecules of fibres, which have retained some of these impressions, the memory of them is lost. Too much softness, as well as too great rigidity of the fibres, are injurious to reminiscence.

The celebrated Soemmering (born 1755, died 1830), was about the last anthropologist of note who assigned to the soul a special seat in the encephalon.

"When," says Soemmering, in the introduction to his work *On the Organ of the Soul*,* "during the summer of 1793, after laborious researches touching the human brain, I read, for recreation, Platner's *Questiones Physiologicae*, and accidentally glanced at the drawings, the result of my researches, the idea suddenly struck me that if the principles laid down by Platner were correct, the *prôtôn aisthetêrion* must be in the moisture of the ventricles of the brain."

The more, he adds, he studied this subject, the more he became

* *Ueber das Organ der Seele von S. Th. Soemmering.* Berlin, 1796.

convinced of the probability, not to say the truth of his theory. He could never understand why the *sensorium commune* was assigned to a solid, or rather a rigid portion of the brain (§ 31). As there is no part of the brain which has not been found destroyed without perceptibly interfering with the function of the *sensorium commune*, the latter cannot be limited to a minute solid portion of the brain. If, further, the *sensorium commune* is in the brain, it must be, as acknowledged by many eminent physiologists (Haller, Albinus, Tiedemann, Platner, etc.), in that part of the brain where all the nerves meet.

Now, the cerebral ends, or the origins of *most*, if not *all* the nerves, may be traced to the walls of the ventricles, where they are washed by, or come into contact with the *aqua ventriculorum cerebri*, which fluid he considers as the organ of the *sensorium commune*, or in other words, the seat of the soul. The liquid of the ventricles is therefore the real *medium uniens* of all the nerves, between body and mind. He then discusses the question, whether a fluid can be animated, and answers it in the affirmative, and that there is no valid reason why the liquid of the ventricles should not be organised just as the albumen of the egg. This work, we may add, is dedicated to Kant, the meta-physician.

We have now brought our historical outline of the localisation theory down to the beginning of the present century. In doing so we have given extracts from the writings of some nearly forgotten authors, as well as from classical writers on the functions of the brain. We think that the discussion of a scientific theory is best advanced by tracing the origin of the fundamental idea; by noting the phases through which it has passed, by watching its gradual development, its maturity, its decay, and its likely resuscitation; for an idea once engendered, never dies, it is sure to revive at some period, though perhaps under a different name.

[To be continued.]

Anthropological News.

ARCHAIC ANTHROPOLOGY AT PARIS.—The first portion of the Proceedings of the 1867 meeting of the Congrès International d'Anthropologie et d'Archéologie Préhistoriques, held at Paris, has been issued. It contains few papers of any length, the principal being those of M. Arthur Issel, "On Evidences of the Antiquity of Man in Liguria"; Mr. Boyd Dawkins "On the Pleistocene Mammifera found associated with human remains in Great Britain"; and of M. Philibert Lalande "On the Megalithic Monuments of

the departments of La Corrèze and La Cantal". M. Issel's paper is directed to the question raised by Professor Nicolucci, Hon. F.A.S.L., whether the Ligurians are not an aboriginal race, independent of the great Aryan family, and in this respect he claims for the facts he has collected the special attention of anthropologists. Several human fossils had been found in pliocene deposits within the very limits of the town of Savona. The only bones which had been preserved were, a piece of the right parietal, a fragment of the left upper jaw, with a false molar, a part of the right lower jaw, containing the last molar, and others of less importance. In general, they were of less than the normal size. At Verrizzi, near the seacoast, had been discovered a cavern, containing fossil bones and land shells, which had been explored by Professor Ramorino, now of Buenos Ayres. The cavern was too small to have ever been inhabited; but it contained some pieces of charcoal, and some of the bones had been broken for the purpose of extracting the marrow. The well-known cavern of Menton had been recently again explored by Professor Perez, who discovered many worked implements of flint, jasper, cornelian, etc. Caves at Finale and Toirano contained human bones and worked bone implements. Numerous other recent discoveries of stone weapons had been made in the province, presenting every variety of form. Two of these are figured in illustrations to the paper, and appear to be very elegant and carefully finished spearheads. Only one object of metal, belonging to prehistoric periods, had been discovered. Mr. Boyd Dawkins's paper is a *résumé* of the discoveries of human remains in connexion with those of extinct mammalia in England, ground over which the readers of the *Review* have been frequently led. He supplies a table, showing the mammalia whose bones were found in four caves, with human remains, and in twenty-six caverns without human remains; and also the like details for three river-deposits with human remains, and thirty-seven without.

GERMAN ANTHROPOLOGY.—It is always satisfactory to welcome into existence any periodical devoted to natural science, and to mark its method of treating the subjects in which anthropologists are so deeply interested. In the present instance, we have to consider, first, the applicability of the title; and next, the rank which the new periodical claims for itself among the many scientific publications of the day. *Hertha** is a very good name, but, unfortunately, combined with a very superficial method of treatment. Dr. Rolfe's recent book on *Man*, which was very popular in its character, is supplemented by a publication no less popular. We are here presented with no new views,—no great amount of genius is exhibited; and while we may express some degree of pleasure at the attempt, we cannot but feel regret that "our young friend" manifested no "go" in it. We have a restatement, in a very milk and watery way, of the Darwinian hypothesis, containing nothing worthy of attention. Mild criticism of books, more or less recent, follows; and well-known sources of information, such as Dennis's *Etruria*, are resorted to for the pabulum with which to feed the printer's press, and diminish the paper merchant's store. Mediocrity and an atmosphere of "behind handedness" are the main characteristics of the magazine; and while everything is undoubtedly respectable, there is nothing which would

* *Hertha*, *Zeitschrift für Naturwissenschaft und Völkerkunde*. Herausgegeben von Dr. Frederick Rolfe. Erster Band. Zweites Heft. Frankfurt am Main, 1869.

tempt the student of science to pause and say "here is something of mark." Even the wrapper bears an anthropological absurdity on the face of it. Popular magazines, unless very efficiently conducted, have neither a public to address, nor any vitality in themselves, except of the vegetative kind. It is very praiseworthy of Dr. Rolle to employ printers in these days of little enterprise, and that is all we can say. Hertha was an ancient deity of the Teutons,—a nice, respectable, easy-going goddess,—and her literary representative is a nice "goody-goody easy-going nightcapped" magazine. We took it to bed the night we received it, and fell comfortably to sleep without experiencing any horrific slumbers, or seeing any spectral appearances afterwards. Science retired from business, and perusing good old authorities, equal in value to time-honoured Goldsmith or Magnall's *Questions*, won't do for these modern days.

K. R. H. M.

SCIENTIFIC SOCIETIES.—Under this heading the following article appeared in the *Pall Mall Gazette* of October 13th, 1868, and is here reprinted as an interesting historical document.—Those who are *au courant* of the scientific and literary gossip of the day are aware that the Ethnological and Anthropological Societies have not always, indeed have very rarely, been on harmonious terms. The first was founded by Dr. King in 1843, and the last by Dr. Hunt in 1863. If their objects could be guessed by their titles, there should not be much difference between them; since the one may be defined as the science which treats of the varieties of the human race, and the other would relate to the natural history of the human species. It may be that the senior society was jealous of the junior; certainly the latter, while professing the utmost respect for her elder sister, made rather high pretensions, urging that pure ethnology was but a part of anthropology, and that she herself was more comprehensive in research, and also less shackled by routine and tradition. Thus it came to pass that on one occasion, connected with the meeting of the British Association, the relations between the two societies were something more than strained. It was felt more than once by the leading members on both sides that an amalgamation, if it could be brought about, would be desirable; and very lately it was stated that so far as financial matters were concerned such an arrangement had been decided on. Now it appears however, that those appointed to act were unable to agree upon a name for the new amalgamated society; the Ethnological wishing to be born anew as the Society for the Promotion of the Science of Man (which name is certainly open to objection, since whatever man may be he is not precisely a science) and the Anthropological desiring to retain its original title. In consequence, it would seem, the negotiations have altogether failed. Both had on their list of members the names of some of the most celebrated explorers and savans of the day; the older society was supported by a well-known literary and scientific weekly journal, the transactions of the younger were chronicled by arrangement with the editor of the *Anthropological Review*. The history of this review and of its connection with the society is explained by the editor in the present quarterly number. There is no need to recount in detail those difficulties which beset the starting of any new organ of public opinion—the jealousies that are aroused, the susceptibilities that have to be studied, or the financial side of the question, which requires to be considered from more than one point of view. Even the Ethnological Society, at one time of its existence, published little or nothing for nearly seven years, and was, so to speak, in a comatose condition. The Quakers had obtained a footing in it, and men whose views were rather bold and speculative than

orthodox or humanitarian were blackballed as soon as they were proposed as members. In 1858 the anniversary meeting collected but six members, including the president, at that time Sir James Clark! In 1859 some gentlemen drew up a prospectus with the object of publishing a quarterly journal of ethnology, but circumstances delayed the carrying out of the plan, and it did not appear until 1862, and then under the title of the *Anthropological Review*. It had long been felt that at the meetings of the Ethnological Society there was a want of sufficient scientific and philosophical freedom of opinion, that the expression of the critical spirit was repressed rather than encouraged, and that the range of subjects was unduly and unwisely limited in extent. The presence of lady members at these discussions was believed to operate unfavourably on them in this respect, and influenced by these considerations, a number of gentlemen united to form the Anthropological Society, based on regulations which they hoped would accomplish a reform in the direction desired. The *Anthropological Review*, while holding itself entirely independent in its own views, offered on certain conditions to publish quarterly a report of the proceedings of both societies. This proposal was accepted by the Anthropologists, but declined by the Ethnologists; and the result of the experiment is stated to have been economically successful, as the subscribers of the former were thus made cognisant of the merits and scientific intelligence of the review. Some offence was occasionally taken by the members when the editor used his judgment in condensing or eliminating extraneous or useless matter from the reports, but difficulties of this nature frequently and inevitably beset any editor gifted with firmness and discretion. By some it was thought that the connection between the society and the review, though a purely business one, was a mistake, and that the remarkably outspoken opinions ventilated by the last had a detrimental effect on the fortunes of the first. We do not ourselves think this probable, though the proprietor and editor has offered to place the copyright of the review, unconditionally and free from debt, in the hands of the society. It does not appear that the Anthropological Society has so far been a pecuniary success. It has almost from the first had two difficulties to contend with, and on both points it certainly commands our sympathy. That which related to the finances it might have at any time escaped had the anthropologists chosen to swell their receipts by admitting as members ladies. But as the exclusion of ladies was precisely one of the original reasons for starting the Association, they declined to accept this solution of their affairs. The force of the arguments will be fully understood by the following extract, which is in the dedication of Carl Vogt's *Lectures on Man*, to Professor Broca, written in 1864:—"The standpoint claimed for the science of ethnology by the late Dr. Knox, by Captain Burton, by myself, and some others, was that of a grave, erudite, and purely scientific study, requiring the most free and serious discussion, especially on anatomical and physiological topics, for the elucidation of the many difficult problems arising out of the subjects brought forward. This, however, was far from being the opinion of a large and powerful section of the society, headed by my venerable friend Mr. John Crawford. The party under his leadership desired to place the Ethnological Society on a footing with the Royal Geographical Society, and to render its meetings fashionable and popular by the admission of ladies. You will doubtless smile at the strange idea of admitting females to a discussion of all ethnological subjects. However, the supporters of the 'fair sex' won the day, and females have been regularly admitted to the meetings of the Ethnological

Society during the last three years. Even now the advocates of this measure do not admit their error, nor do they perceive how they are practically hindering the promotion of those scientific objects which they continue to claim for their society. On the contrary, they rejoice at their victory, and Mr. Crawford has publicly on more than one occasion ascribed the success which attended the Ethnological Society under his régime to the admission of ladies." We perfectly coincide in the opinion expressed above. There are and ought to be books written by men for men, which women really interested in such subjects have full liberty and are quite right to read. There is no law even to prevent their having societies of their own if they wish, but as matters stand their presence at the discussions of the Anthropological Society is not desirable, and would certainly either restrain freedom of speech, or embarrass alike the speaker and the audience; more particularly since such subjects as hybridity, miscegenation, strange and mysterious rites practised by savage nations, let alone the researches into Phallic worship, seem to have a special fascination for some of the anthropologists. Thus we find one terming the society the "refuge of destitute truth," where that which might not be said elsewhere could be freely expressed; another is affectionately exhorted "not to be afraid to give full details, he should not shrink from telling them the whole story. After he had done so, and it had been printed in the journal of the society, they could always do as the Abbé Domenech did when he published his *Livre des Sauvages*, paste down the leaves which contained the narrative;" while, with reference to one distinguished member, "the modesty which prevented him giving further particulars" was publicly alluded to as a misfortune. Later on dissensions arose with respect to the effect of missionary enterprise on savages, and also as to whether the biblical account of the Creation and Fall, and other kindred subjects, were to be understood as perfectly open questions, to be treated in a purely scientific and critical spirit or otherwise. The result of this was a secession of some twenty members, who formed themselves into a Victoria Institute under the genial guidance of Lord Shaftesbury. On this point, as on the previous one, we entirely agree with the course taken by the society. Let the same rule guide clergymen as women in propriety and fitness. When they cannot properly listen let them stay away. The speech addressed by the president of the society to the members last February contained the following very natural little outburst:—"Those who object to our non-acceptance of the biblical account of man's formation as the starting point of our inquiries, we can now consign to the 'Victoria Institute'; and those who from diseased livers or disappointed ambition cannot discuss scientific questions without a childish exhibition of temper, to the softening influence of the female sex at the Ethnological Society."

BIBLICAL SCIENCE.—"In scientific circles, the heresy of the most efficient members is startlingly apparent. Against members of the Anthropological Society charges of atheism are freely levelled; and although such a charge does not seem to be justified by any reports of their meetings, or by their printed publications, it is clear that not only out of doors, but even amongst their own circle, it is felt that their researches conflict seriously with the Hebrew writ. The Society has been preached against and prayed against, and yet it is simply a society for discovering everything possible about man, prehistoric as well as modern. It has, however, an unpardonable vice in the eyes of the orthodox,—it encourages the utterance of facts without regard to their effect on faiths."—*National Reformer*, January 14th, 1868.